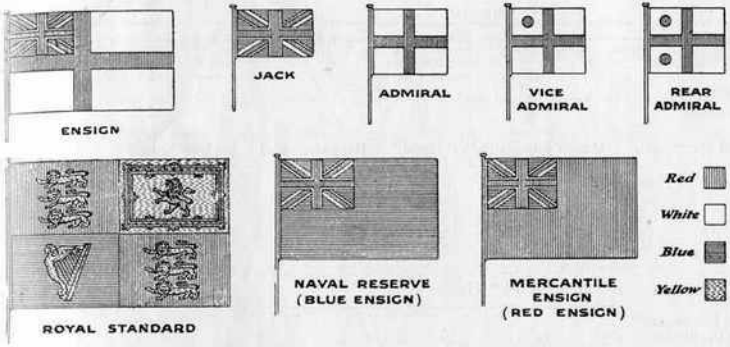
NOTE :—The following pages, descriptive of H.M. Navy, have been inspected and approved for publication by the Admiralty. The Admiralty accepts no responsibility whatever for the accuracy of any of the statements made in "Fighting Ships" as regards H.M. Navy.

BRITISH ROYAL NAVY.



Note.—M (International Code) at masthead indicates that Submarines are in company and/or exercising. When accompanied by group from Numerical Table (Int. Code), number of Submarines are indicated by group hoist. R.F.A. fly Blue Ensign with Admiralty Badge (Foul Anchor). Mercantile F.A. fly Red Ensign.

Colour of Ships.

Warships in Home Waters, dark grey; in Mediterranean, light grey. Cruisers and Sloops on China Station, white hulls, grey upperworks. Sloops in East Indies and Red Sea, and Cruisers in East Indies, North America and West Indies, white with primrose-yellow masts, funnels and yards. Sloops for North America and West Indies, New Zealand and Africa Stations, grey all over. Fishery Protection Vessels, Depot Ships and many auxiliaries in Home Waters, black hulls and light grey upperworks; funnels may be varied between black, white and grey, and may have rings for identification purposes. Surveying Ships have white hulls with yellow funnels. All Destroyers have their Pendant Numbers on bows and across sterns. Submarines have their Class Letter and Numbers painted on sides of Conning Tower.

Recent Construction.

1929 Programme. 1 Cruiser (Leander), 1 Leader, 4 Destroyers, 4 Sloops, 3 Submarines.

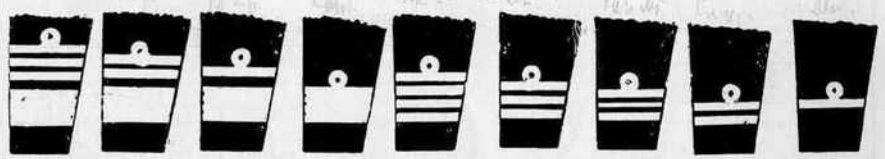
1930 Programme. 3 Cruisers, 1 Leader, 8 Destroyers, 3 Submarines, 4 Sloops, 1 Net Layer.

1931 Programme. 3 Cruisers, 9 Destroyers, 4 Sloops, 3 Submarines, 1 China G.B., 1 Mining Tender.

1932 Programme. 3 Cruisers, 9 Destroyers, 4 Sloops, 3 Submarines, 1 G.B., 1 Destroyer D.S., 2 Tenders.

1933 Programme. 3 Cruisers, 9 Destroyers, 5 Sloops, 3 Submarines.

Uniforms.



Admiral | Vice-Admiral | Rear-Admiral or Commodore (1st Class) | Commodore (2nd Class) * | Captain | Commander | Lieutenant-Commander | Lieutenant | Sub-Lieutenant

Admiral of the Fleet has one stripe more than Admiral, i.e., four in all.

Relative Ranks. Non-Executive Branches (as modified, 1926).

Engineer Officers have same as above with purple between stripes.

Medical	"	"	"	"	scarlet	"	"
Dental	"	"	"	"	orange	"	"
Accountant	"	"	"	"	white	"	"
Instructor	"	"	"	"	light blue	"	"
Shipwright	"	"	"	"	silver grey	"	"
Wardmaster	"	"	"	"	maroon	"	"
Electrical	"	"	"	"	dark green	"	"
Ordnance	"	"	"	"	dark blue	"	"

* Ring separated from top stripe.

Navy Estimates and Personnel.

(1931) £54,679,560 net.	(1932) £50,476,300.	(1933) £54,330,054.
Personnel: 95,000.	Personnel: 91,410.	Personnel: 90,300.

Board of Admiralty (Feb. 1933).

First Lord: The Rt. Hon. Sir Bolton Eyres-Monsell, G.B.E.
First Sea Lord and Chief of Naval Staff: Admiral Sir Ernle Montacute Chatfield, K.C.B., K.C.M.G., C.V.O.
Second Sea Lord: Admiral Sir A. D. P. Rogers Pound, C.B.
Third Sea Lord and Controller: Rear-Admiral C. M. Forbes, C.B., D.S.O.
Fourth Sea Lord: Rear-Admiral Geoffrey Blake, C.B., D.S.O.
Deputy Chief of the Naval Staff: Vice-Admiral Sir C. J. C. Little, K.C.B.
Civil Lord: Capt. David Euan Wallace, M.C., M.P.
Parliamentary and Financial Secretary: Lord Stanley.
Permanent Secretary: Sir Oswyn A. R. Murray, G.C.B.

Committee of Imperial Defence.

President: The Lord President of the Council.
Members: H. M. Secretaries of State for War, Air, Colonies, India; The First Lord of Admiralty: The First Sea Lord and Chief of Naval Staff; Chief of the Imperial General Staff; Chief of the Air Staff.
Also representatives of H.M. Treasury and other Government Departments are called in, as requisite.

Director of Naval Construction.

Sir A. W. Johns, K.C.B., C.B.E.

Mercantile Marine.

(From "Lloyd's Register," 1933).

Total for whole of British Empire, 9,513 vessels of 21,574,959 gross tonnage.

BRITISH NAVAL ORDNANCE.

NOTE.—All details unofficial, but believed to be approximately correct. (Particulars formerly given of some older marks of guns, no longer mounted in H.M. Ships, have been deleted.)

Calibre. ins.	Mark.	Length of Bore in Calibres.	Weight of piece without B.M. tons cwts. qrs.	Weight of Projectile. lbs.	M.V. f. s.	M.E. f. t.	Weight of Full Charge. lbs.	REMARKS.
								HEAVY B.L.
16	I	45	103 10 0	2461	2953	..	640	"Nelson" and "Rodney."
15	I	42	97 3 0	1920	2450	84,070	428	Mounted in "Royal Sovereign," "Queen Elizabeth," "Hood," "Repulse," and "Erebus" classes.
13.5	VI	45	75 8 0	1250 L. / 1400 H.	2700	63,190	293 L. / 297 H.	
	V	45	74 18 1	..	2500	63,190	..	"Iron Duke."
								MEDIUM B.L.
8	I	55	16 10 0	256	3150	17,615	..	"Kent," "London," "Dorsetshire" and "York" classes.
7.5	VI	45	13 11 0	200	2800	12,500	61	"Frobisher" and "Effingham."
	V	50	15 16 2	200	2800	12,500	61	"Hawkins" and "Vindictive."
6	XVIII	50	8 9 2	100	2800	..	$28\frac{6}{8}$	
	XVI	50	7 19 1	100	3100	6665	33	
	XII	45	6 14 2	100	2750	..	$27\frac{4}{8}$	Cruisers and Secondary Armament Battleships and Battle Cruisers.
	XI*	50	8 8 2	100	2937	5990	$32\frac{1}{12}$	
	XI	50	8 8 2	100	2937	5990	$32\frac{1}{12}$	
	VII	44.9	7 7 2	100	2493	5250	$28\frac{6}{8}$	Secondary Armament "Iron Duke."
5.5	I	50	6 1 0	82	2725	4222	$22\frac{4}{4}$	Breech mechanism of the Holmstrom type. Aircraft Carriers and Secondary Armament "Hood."
4.7	II	40	3 1 0	48.5	2560	2205	..	AA. mounted in "Nelson" and "Rodney."
	I	45	3 1 0	50	3000	2800	$11\frac{3}{8}$	Mounted in later Flotilla Leaders and Destroyers
								LIGHT B.L.
4	XI	40	1 4 3	31	2100	..	..	
	IX*	44.35	2 1 1	31	2625	1934	$7\frac{11}{16}$	Secondary Armament, Battle Cruisers and Monitors.
	IX	44.35	2 1 1	31	2625	1934	$7\frac{11}{16}$	
	VIII	39.8	1 4 2	31	2287	..	$5\frac{8}{8}$	Earlier Destroyers.
								MEDIUM Q.F.
6	III	40	7 0 0	100	2025	..	$13\frac{1}{4}$	
4.7	VII	50	3 5 0	45	..	..	$8\frac{11}{16}$	
	V*	43.9	2 10 0	45	..	..	$8\frac{11}{16}$	
	V	43.9	2 10 0	45	..	..	$8\frac{11}{16}$	

BRITISH NAVAL ORDNANCE.

LIGHT GUNS.—(See Note on previous page.)

Calibre. ins.	Mark.	Length of Bore in Calibres.	Weight of piece without B.M.	Weight of Projectile.	M.V.	M.E.	Weight of Full Charge.	REMARKS.
			tons cwts. qrs.	lbs.	f. s.	f. t	lbs.	
LIGHT Q.F.								
4	XII	40	1 6 0	31	2100	..	$5\frac{1}{8}$	Semi-automatic. Fixed Ammunition. A.A. mounting. Battleships, Battle Cruisers, Cruisers and Aircraft Carriers.
	VII	40.5	1 4 4	31	2750	1970	$5\frac{7}{16}$	Do. do. do. do.
	V*	45	2 1 2	31	2625	1934	$5\frac{3}{8}$	Do. do. do. do.
	V	45	2 1 2	31	2625	1934	$7\frac{11}{16}$	Semi-automatic. Earlier Destroyers and Submarines.
	IV	40	1 3 3	31	2225	1137	$5\frac{1}{2}$	Do. Earlier Destroyers and Submarines.
	III	40	1 3 0	25	2456	1200	$3\frac{9}{16}$	D.A.M.S.
3	I	45	1 0 0	16 / $12\frac{1}{2}$	2500	..	$2\frac{1}{8}$ / $2\frac{1}{2}$	Semi-Automatic. Fixed ammunition. AA. mounting. Earlier Cruisers, Flotilla Leaders and Destroyers.
3	I	23	5 3	$12\frac{1}{2}$	1700	..	$1\frac{5}{16}$	Fixed ammunition.
3	I	40	11 2	$12\frac{1}{2}$	2197	..	2	Minesweepers, Sloops and Gunboats.
2.24	II	40	7 0	6	1735	..	ozs. $8\frac{3}{4}$	Fixed ammunition. Auxiliary patrol.
1.85	II	40	5 0	$3\frac{5}{16}$	1873	..	$7\frac{1}{4}$	Fixed ammunition. Hotchkiss. Saluting guns in all classes.
	I	50	6 0	$3\frac{5}{16}$	2575	152	$13\frac{1}{8}$	Fixed ammunition. Vickers. Auxiliary Patrol. Aircraft Carriers.
	II	39.37	1 3	2	2000	55.5	3	Automatic. AA. mounting. Cruisers, Flotilla Leaders and Destroyers.
	I	39.37	1 3	2	2000	55.5	3	Automatic. AA. mounting. Cruisers, Flotilla Leaders and Destroyers.
ANTI-SUBMARINE HOWITZERS, B.L.								
11	I	8.5	1 14 2	200	..	..	lbs. ..	
7.5	I	8.5	6 0	100	390	105.5	$1\frac{1}{2}$	

STICK BOMBS.

Gun.	Weight of Bomb.	Charge.		
4·7 in. Q.F.	600 / 500 / 250 / 200	3 lbs. 14 ozs.		
4 in. B.L. or Q.F.	350	2 lbs. 2 ozs.	Mark IV. & VIII.	
	200	3 lbs. 4 ozs.	Mark V & IX.	
12 pdr. 12 cwt. Q.F.	200	1 lb.		

Torpedoes.

No official details obtainable. Standard torpedo used is the 21 inch Mk 5 heater type, 18 inch tubes being obsolete and only fitted for instructional purposes in certain destroyers and submarines. Specially strengthened 14 inch torpedoes are used for dropping from seaplanes. In all new cruisers tubes are of the above-water pattern; the great height of these above the waterline has necessitated modifications of construction and depth-keeping mechanism to avoid breaking up the torpedo, and deep diving when fired. Torpedoes are fired by air or a cordite charge, and are of the improved heater type fitted with high and low speed settings with a corresponding short or long range, and are directed by an angled gyro to give increased firing arc.

Searchlights.

These are of 36 inch and 24 inch diameters. The number of 36 inch pattern has been reduced to six in capital ships with 2—24 inch for signalling. Cruisers carry 4—36 inch lights, while 1—24 inch is mounted in destroyers. The searchlights are elevated and trained from remote positions, and are controlled by an electrical 'follow-the-pointer' device. In the Mk 5—36 inch arc lamp the carbons revolve and the size of the arc is regulated by an electro-magnetic arc beater, which gives a nearly parallel beam reflected from the mirror. As the carbons no longer burn in a spirit flame the beams have lost their characteristic bluish tint. Carbons are fed automatically with alternative hand operation, while an improved pattern of arc striker minimizes the risk of 'broken carbon.'

Mining.

Mk H2 mine, extensively used in the War, is still the standard type used from surface minelayers, with a modification for use by submarines. Weight 650 lbs., diameter 38 inches, buoyancy 400 lbs., fitted with 6 "horns" for exploding charge. Several marks of sinker are used in conjunction with this mine according to the depth, tides, etc. No details are obtainable of further types of mine, *e.g.*, observation.

Protective paravanes are carried by all deep draught ships, of a similar design to that used during the War.

BRITISH WARSHIP BUILDERS.

Note.—The headings give the abbreviated titles by which builders are mentioned on later Ship Pages. With a few exceptions, all details given below were kindly approved or furnished by the firms mentioned.

Vickers—Armstrongs. (A)

(See also Vickers—Armstrongs. (B) on following page).

VICKERS—ARMSTRONGS, LTD. (NAVAL YARD, HIGH WALKER, NEWCASTLE-ON-TYNE). Area 83 acres. Opened 1913, equipped for the construction of both Warships and Mercantile Vessels. 9 Building Berths of lengths respectively 1,000 feet, 900 feet., 800 feet., two of 620 feet., four from 450 feet to 550 feet. Water frontage about 700 yards plus fitting-out quay about 800 yards. Building Berths fitted with modern Tower Cranes and fitting-out berth recently equipped with giant 250-ton Hammer Head Crane in addition to 30—10, and 5-ton Travelling Cranes. Extensive Workshops fully equipped with the most modern machinery for Naval or Mercantile Ship construction, etc.

Agencies all over the World.

Cammell Laird.

CAMMELL LAIRD & CO., LTD. (BIRKENHEAD AND TRANMERE). Area of yard, 108 acres. Six slips (longest 1000 ft.), six small slips. Seven graving docks, five small and No. 6, 708 × 80 ft.; No. 7, 861 × 90 ft. Outer basin, 14½ acres; inner basin, 2¾ acres. Annual capacity, 100,000 tons *gross* and 400,000 H.P. output. Establishment consists of North Yard, where vessels up to 500 feet in length can be constructed, and the South Yard, in which are slips suitable for vessels between 600 and 900 feet in length. Builders of heavy armoured ships, cruisers, flotilla leaders, destroyers, submarines, &c., as well as of merchant vessels of all classes. Equipment of yard thoroughly up-to-date.

Clydebank.

JOHN BROWN & CO., LTD. (SHIPBUILDING & ENGINEERING WORKS, CLYDEBANK, GLASGOW). Area, 80 acres. River frontage, 1050 yards. Building berths: Five of 950 to 600 ft. in length, and three 600 to 450 ft. in length. Building berths are commanded by derricks, tower and gantry cranes; two of berths are covered. Tidal basin: 5½ acres in area, 30 ft. depth, L.W.O.S.T. with two entrances of 130 and 180 ft. width respectively. Basin commanded by two 150-ton cranes; also four wharf cranes of 5 to 30 tons capacity. Builders of war and mercantile vessels of all types and the largest dimensions, inclusive of machinery and equipment. Steam engines of reciprocating type, Parsons and Brown-Curtis turbine types; and Diesel oil engines.

Denny.

WM. DENNY & BROS., LTD. (LEVEN SHIPYARD, DUMBARTON). Area: 60 acres. Building berths up to 550 ft. in length. Two wet basins, one 475 ft., one 910 ft. Numerous cranes with lifts up to 110 tons. Destroyers, torpedo boats, submarines and mercantile vessels built, with necessary machinery, &c.

Doxford.

WM. DOXFORD & SONS, LTD. (PALLION YARD, SUNDERLAND). Builders of vessels up to 20,000 tons dead-weight. Output over 100,000 tons *gross* per annum. Build Diesel marine engines of opposed piston, airless injection type, up to any size.

Fairfield.

THE FAIRFIELD SHIPBUILDING & ENGINEERING CO., LTD. (GOVAN, GLASGOW). Area: 70 acres. Water front: 2600 ft. 11 slips to build ships up to 900 ft. in length. Dock: 6 acres with 270 ft. entrance. 250-ton crane. Wet basin: 900 ft. long and ten docks up to 900 ft. Naval and mercantile ships, engines, boilers, &c., of all types. Associated with Northumberland S.B. Co. and Workman, Clark & Co.

Harland & Wolff.

HARLAND & WOLFF, LTD. (BELFAST). Eight large slips in main yard (two 860 × 99 ft.). Six large slips in East Yard. Two large docks and three smaller in the vicinity of the works. Also at Govan, Glasgow, 7 large slips; Greenock, 6 large slips. Engineering establishments: Diesel Engine Works, Finnieston and Scotstoun, Glasgow; Clyde Foundry, Govan, Glasgow. Exceptional facilities at London, Liverpool, and Southampton, for the repair of ships and machinery.

Hawthorn Leslie.

R. & W. HAWTHORN, LESLIE & CO., LTD. (HEBBURN YARD, HEBBURN-ON-TYNE). Twelve slips up to 700 ft. long. One dock: 460 × 68 × 21 ft. on blocks; 26 ft. draught at quay at low water. Engine department of 150,000 I.H.P. per annum. Designers and builders of cruisers, destroyers and other warship types. Engine every type of war vessel. Builders of locomotives for main line service and works.

Palmers.

PALMERS SHIPBUILDING & IRON CO., LTD. (JARROW AND HEBBURN-ON-TYNE). All classes of war and mercantile vessels. Build internal combustion, steam turbine and reciprocating engines, water-tube and Scotch boilers. Fully equipped for all classes of repairs to hulls and machinery. Twelve slips. Employees: 9000. Has two docks: Hebburn, 700 × 90 × 29 ft.; Jarrow, 440 × 70 × 18 ft.; also patent slipway (Jarrow), and dry dock at Swansea, 560 × 75 × 26 feet—all suitable for warships and mercantile vessels.

Scotts'.

SCOTTS' SHIPBUILDING & ENGINEERING CO., LTD. (GREENOCK). Slips for eight large vessels; fitting-out basin; graving dock. Makers of heavy oil engines and licensees for Laurenti type of submarines.

Stephen.

ALEX. STEPHEN & SONS, LTD. (LINTHOUSE, GOVAN, GLASGOW). Build destroyers and torpedo craft; also mail, passenger and cargo steamers. Machinery: all types, 40,000 H.P. output per annum. Boilers: Scotch, cylindrical and all water-tube types. Seven building berths for building ships up to 700 ft. long. Water front: 1500 ft. Area of yard: 52 acres. Repairs of all classes to hulls and machinery at firm's Govan graving dock. Works adjacent to Glasgow Docks.

Swan Hunter.

SWAN, HUNTER & WIGHAM RICHARDSON, LTD. (WALLSEND-ON-TYNE). Sixteen building berths up to 900 ft. in length, served by overhead electric cranes. Four of the largest berths covered in. Annual gross shipbuilding capacity, 150,000 tons. Engine works: 75,000 H.P. output per year.

The dry dock department includes a large repairing yard with three graving docks. Engine works build marine oil engines, marine steam turbines, and reciprocating steam engines. Total area of works: 80 acres. Water frontage: 4000 ft.

Allied firms are the Wallsend Slipway & Engineering Co., Ltd., Wallsend; Barclay, Curle & Co., Ltd., of Whiteinch, Glasgow, Govan and Elderslie; Lindsay, Swan, Hunter, Ltd., salvage contractors, Sunderland.

Thornycroft.

JOHN I. THORNYCROFT & CO., LTD. (WOOLSTON, SOUTHAMPTON). Builders of torpedo boats, destroyers, light cruisers, merchant vessels up to 400 ft. Thirteen building berths, including three covered in. One hauling-up slip for ships up to 170 ft. long. Water frontage: 2000 ft. Opposite Southampton Docks. Specialities: Turbines, water-tube boilers, oil fuel gear. Workshops in Southampton Docks, adjacent to fitting-out dock for hull and machinery repairs. Total floor area: 25,000 sq. ft.

Vickers—Armstrongs. (B)

(See also Vickers—Armstrongs (A) details on preceding page).

VICKERS, LTD. (BARROW-IN-FURNESS). Area of works: 121 acres. Thirteen building berths, of length respectively 800 ft.; 750 ft.; 700 ft.; 630 ft.; two of 600 ft.; three of 550 ft.; 450 ft.; 400 ft.; 350 ft.—the two latter being entirely under cover. Water frontage about 1,200 yards plus fitting-out quays about 1,000 yards. Building Berths fitted with modern Tower Cranes and covered Berths by Gantry Cranes. Fitting out Berths equipped with two 150-ton Giant Hammer-head cranes, 30-ton electric jib crane, Steam Derrick and Travelling Cranes, etc. Floating dock, 420 × 59½ ft., to lift 5,200 tons. Graving dock, 500 × 60 × 22 ft. Extensive shops fully equipped with the most modern machinery for the construction of steam and internal combustion engines, boilers, electric equipment, gun mountings, and every kind of naval and mercantile engineering work. Agencies all over the world.

White.

J SAMUEL WHITE & CO., LTD. (COWES). The oldest shipyard on the Admiralty List. Light cruisers, gunboats, flotilla leaders, destroyers, submarines, minelayers, patrol boats, turbine pinnaces, and small naval craft of every kind. Seven building berths. Engine works for reciprocating and turbine engines of highest powers. "White-Forster" water-tube boilers, "White" Diesel engines, and "White" patent oil fuel installations. Hammer-head 80-ton crane.

Yarrow.

YARROW & CO., LTD. (SCOTSTOUN, GLASGOW). Area of yard: 16 acres. Water frontage: 750 ft. Six building berths, for ships up to 400 ft. long. Wet basin for fitting-out, 350 × 85 ft., served by 50-ton crane. Specialities are destroyers, fast yachts, vessels for shallow river navigation, both of stern-wheel type and of type propelled by screws working in tunnels, Yarrow water-tube boilers and Yarrow superheater, both for land and marine use. Also vessels propelled by internal-combustion motors. (Overseas Branch: Yarrows, Ltd., Victoria, B.C.)

FLEET DISTRIBUTION, 1933 (NOV.)

HOME FLEET

2nd Battle Squadron.
NELSON *(Fleet Flagship).*
RODNEY
MALAYA
VALIANT
WARSPITE (paid off in Reserve)
BARHAM

Battle Cruisers.
HOOD
RENOWN
REPULSE (in Reserve)

2nd Cruiser Squadron.
LEANDER (F)
ACHILLES
NEPTUNE
ORION

Aircraft Carriers.
FURIOUS
COURAGEOUS (F)

Fleet Target Service.
CENTURION
SNAPDRAGON
GUARDIAN
SHIKARI

Destroyers.
CAIRO (D)

2nd Flotilla.	5th Flotilla.	6th Flotilla.
KEMPENFELT (D)	WALLACE (D)	CAMPBELL (D)
COMET	VIMY	VALENTINE
CRESCENT	VELOX	VEDETTE
CRUSADER	VERSATILE	VANQUISHER
CYGNET	VORTIGERN	WALPOLE
VALOROUS	WALKER	WESTCOTT
VEGA	WHIRLWIND	WESTMINSTER
VICEROY	WATCHMAN	WINDSOR
VENETIA	WARWICK	WOLFHOUND
	ADVENTURE	

2nd Submarine Flotilla.
MACKAY (S)
LUCIA (depot)
L 18, 19, 21, 23, 26, 27

MEDITERRANEAN

1st Battle Squadron.
QUEEN ELIZABETH *(Fleet Flagship)*
RESOLUTION
REVENGE (V.A.)
ROYAL OAK
ROYAL SOVEREIGN
RAMILLIES (paid off in Reserve)

1st Cruiser Squadron.
LONDON (F)
SUSSEX
DEVONSHIRE
SHROPSHIRE

3rd Cruiser Squadron.
DELHI (F)
DESPATCH
DAUNTLESS
DURBAN

Aircraft Carrier.
GLORIOUS
SEARCHER (attached)

Destroyers.
COVENTRY (R-A.D.)

1st Flotilla.	3rd Flotilla.	4th Flotilla.
DUNCAN (D)	CODRINGTON (D)	KEITH (D)
DECOY	ACTIVE	BASILISK
DELIGHT	ACHATES	BEAGLE
DAINTY	ANTELOPE	BLANCHE
DUCHESS	ANTHONY	BOADICEA
DEFENDER	ACASTA	BOREAS
DIAMOND	ARROW	BRAZEN
DIANA	ARDENT	BRILLIANT
DARING	ACHERON	BULLDOG
	WORCESTER (reserve)	
	SANDHURST (depot)	
BRYONY	PENZANCE	HASTINGS
	RESOURCE (repair)	

1st Submarine Flotilla.
DOUGLAS (Capt. S)

CYCLOPS (depot)	OBERON	ROVER
WOLSEY	OXLEY	REGENT
	OTWAY	REGULUS

Minesweeper Reserve.

ABERDARE	DERBY	HUNTLEY
ABINGDON	FAREHAM	STOKE
BAGSHOT	HARROW	WIDNES
	MEDUSA (minelayer)	

Fleet Target Service.
ST. ISSEY (tug)
MOY
CHRYSANTHEMUM
OUSE (trawlers)

Gibraltar
CORMORANT (depot)
SHAMROCK

EAST INDIES

4th Cruiser Squadron.
ENTERPRISE
HAWKINS (C. in C.)
COLOMBO

Sloops.
FOWEY
SHOREHAM (S.N.O. Persian Gulf)
BIDEFORD
LUPIN

Surveying.
ORMONDE

AFRICA

6th Cruiser Squadron.
CARLISLE
DORSETSHIRE

Sloops.
WESTON
DAFFODIL
MILFORD
ROCHESTER (F)

Transferred to Govt. of Union of S.A.
SONNEBLOM
IMMORTELLE
AFRICANA

AMERICA AND WEST INDIES

8th Cruiser Squadron.
NORFOLK (C. in C.)
DRAGON
DANAE
EXETER
YORK

Sloops.
SCARBOROUGH
DUNDEE
MALABAR (depot)

NEW ZEALAND

DUNEDIN (F)
DIOMEDE
VERONICA
LABURNUM
PHILOMEL (depot)
WAKAKURA (trawler)

SINGAPORE

TERROR

CHINA

5th Cruiser Squadron.
KENT (C. in C.)
BERWICK
CUMBERLAND
CORNWALL
SUFFOLK
CARADOC

Aircraft Carrier.
EAGLE

8th Destroyer Flotilla.
KEPPEL (D)
VERITY
VETERAN
WHITEHALL
WHITSHED
TAMAR (Commodore Hong Kong)
WILD SWAN
WISHART
WITCH
WREN

Gunboats.

(Yangtse)	(West River)
BEE (S.N.O.)	TARANTULA (S.O.)
SCARAB	CICALA
GNAT	MOTH
APHIS	SEAMEW
LADYBIRD	
COCKCHAFER	
PETEREL	
TERN	
GANNET	
FALCON	
CRICKET	
MANTIS	

Sloops.
BRIDGEWATER
CORNFLOWER
FOLKESTONE
SANDWICH
FALMOUTH

4th Submarine Flotilla
BRUCE
ODIN
OSIRIS
OLYMPUS
ORPHEUS
OTUS
OSWALD
MEDWAY (depot)
PANDORA
PARTHIAN
PERSEUS
PHOENIX
PROTEUS
RAINBOW
HERALD (survey)

Local Establishments.

NORE

Gunnery School. — **T.S. Shotley.**
MARSHAL SOULT — GANGES
TEMPEST — T.S. CADETS
PEMBROKE — FROBISHER

PORTSMOUTH

Navigation School.
ALRESFORD — CATERHAM

Gunnery School.
EXCELLENT — RESTLESS
ST. FAGAN — EREBUS

Torpedo School.
WINCHESTER — STRONGHOLD — VANOC
SKATE — WRESTLER
NIGHTINGALE — MEDEA — VERNON
SKYLARK — KATE LEWIS

Signal School.
SARDONYX — TYRANT
IRON DUKE, CHAMPION, ST. MARTIN — **Gunnery and Torpedo School.**

5th Submarine Flotilla.
DOLPHIN (R.A.)
LADAS — WINCHELSEA — ALECTO
L 22, 52, 53, 54, 56, 69, 71
H 28, 30, 32
THAMES — SWORDFISH — STURGEON

Reserve.
PIGMY
L 6, 14, 20, 25
H 24, 27, 31
X 1
HORNET (C.M.B. base)
CURAÇOA (trooping)

DEVONPORT

Torpedo School.
MELPOMENE — TEDWORTH
VULCAN — AMBUSCADE
AMAZON

PORTLAND

BOSCAWEN (Capt. in Charge)

Anti-submarine Establishment.
OSPREY
WOOLSTON — ROWENA
P C 74 P 40, 59 — SALMON
BLACKWATER — THRUSTER
TORRID

6th Submarine Flotilla.
TITANIA (depot) — VISCOUNT — NETTLE
H 33, 34, 43, 44, 48, 49, 50
STURGEON

Fishery Protection and M.S. Flotilla.

PORTLAND

HAREBELL — GODETIA — ROSEMARY

1st Minesweeping Flotilla.
ALBURY — SELKIRK
DUNDALK — SUTTON
DUNOON — TIVERTON
PANGBOURNE (S.O.)
GARRY — LIFFEY — KENNET

Fishery Protection Gunboats.
BOYNE — DEE
CHERWELL — DOON
COLNE — SPEY
DART

Vessels in Reserve Paid Off, Etc.

NORE

CARDIFF (S.O.R.F.) — ARK ROYAL
CAMBRIAN — MARSHAL SOULT
CANTERBURY — MALCOLM
CALCUTTA — ABDIEL
VINDICTIVE
EMERALD
CURFEW

Destroyers.
SCOUT — WAKEFUL — VISCOUNT
TETRARCH — WHITLEY — VIVIEN
THRACIAN — VESPER — VIMIERA
SCIMITAR — VOLUNTEER — WRYNECK
VENDETTA — WESSEX

Minesweepers.
ELGIN — SALTASH — FORRES
LYDD — SALTBURN — CARSTAIRS
ROSS — FERMOY

DEVONPORT

COMUS (S.O.) — BROKE
CALYPSO — MONTROSE
CAPETOWN — STEADFAST
CASTOR — SCOTSMAN
CALEDON — SERAPH
WALRUS
WATERHEN
THANET

Vessels in Reserve, Paid Off, Etc.—*continued.*

PORTSMOUTH

EFFINGHAM (F.)
CONSTANCE
MINERVA

Destroyers.
SALADIN — TENEDOS
SABRE — VOYAGER
SIRDAR — VAMPIRE
VANESSA — VIVACIOUS
SESAME
THISBE

Sloops.
FOXGLOVE — HELIOTROPE
DELPHINIUM — VERBENA

Submarines.
H 23, L 16, L 17 (all paid off)

ROSYTH

Maintenance Reserve.
GREENWICH (S.O.) — AMBROSE
SEAFIRE — SHAKESPEARE
SENATOR — SPENSER
SERENE — SWALLOW
SPINDRIFT — TROJAN
SPORTIVE — TRUSTY
TURBULENT — VALKYRIE
VANITY — VANSITTART
VECTIS — VENOMOUS
VENTUROUS — VERDUN
VIOLENT — WANDERER
WITHINGTON — WIVERN
ARGUS

MISCELLANEOUS SERVICE

Surveying Ships.
BEAUFORT — FLINDERS
CHALLENGER — IROQUOIS
FITZROY — KELLETT

British Commonwealth Summary of Naval Forces

	Building	Under age	Over age
BATTLESHIPS	—	12	—
BATTLE CRUISERS	—	3	—
HEAVY CRUISERS	—	19	—
CRUISERS	6	24	7
CARRIERS	—	7	—
DESTROYERS	18	38	100
SUBMARINES	6	50	6
MONITORS	—	3	—
SLOOPS	9	33	—
GUNBOATS	2	16	—
PATROL BOATS	—	7	—
MINELAYERS	—	5	—
MINESWEEPERS	—	27	—
NETLAYERS	—	1	—
GUNNERY SHIP	—	1	—
TARGET SHIP	—	1	—
DEPOT SHIPS	1	11	—
SURVEYING SHIPS	—	12	—
TRAINING SHIP	—	1	—

Categories below the line are not affected by the Naval Treaty.

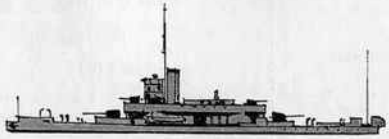
MERSEY Type Trawlers.

DEE Type Trawlers.

P40, P59.

SPEY.

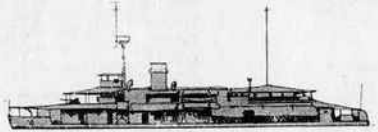
DART and PC 74.



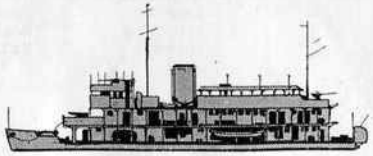
CRICKET APHIS.

SCARAB *class* (2 funnels abreast).

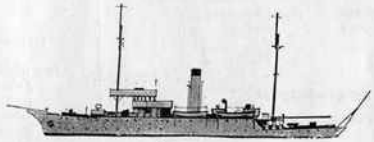
BEE (2 funnels abreast).



SEAMEW, TERN.
GANNET, PETREL.

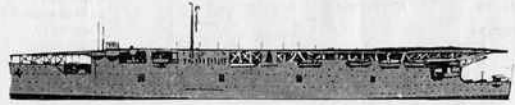


FALCON.



ALECTO.

ENDEAVOUR.



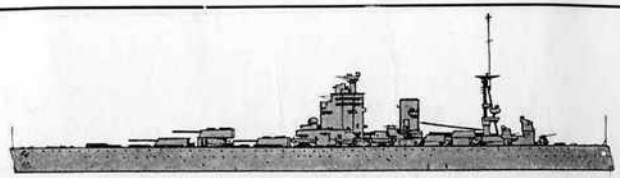
ARGUS.

FURIOUS.

COURAGEOUS. GLORIOUS.

CYCLOPS.

LEANDER.



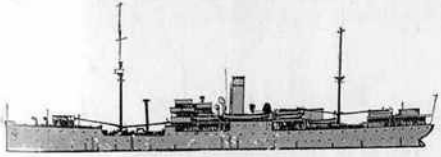
NELSON & RODNEY.

GREENWICH.

ACHILLES, AJAX, NEPTUNE, ORION.

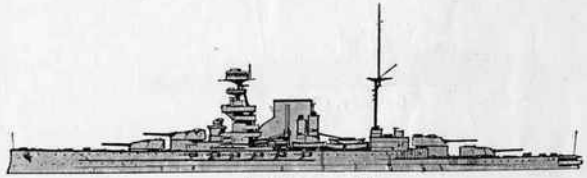
RESOLUTION.

ROYAL SOVEREIGN *Class.*

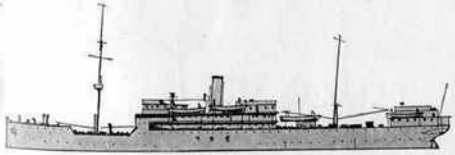


LUCIA.

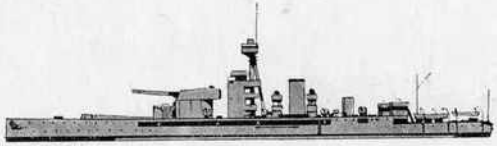
EREBUS.



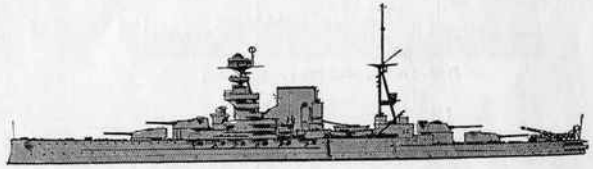
Q. ELIZABETH *Class.*



TITANIA.



TERROR.



BARHAM.

SANDHURST

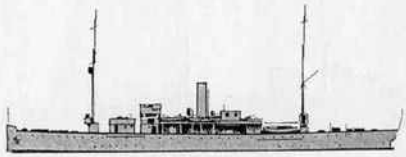
HERMES.

FALMOUTH *Class.*

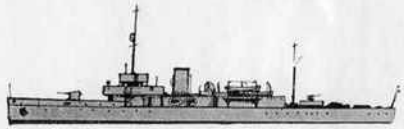
GUARDIAN.

CHRYSANTHEMUM.

BRIDGEWATER *Class.*



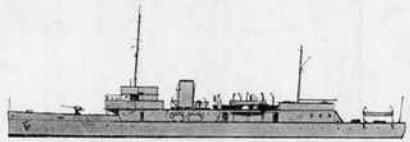
BRYONY.



Twin Screw Minesweepers

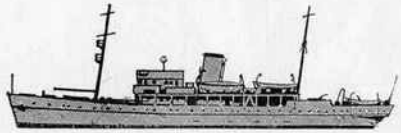
GRIMSBY. LEITH.

HAREBELL.



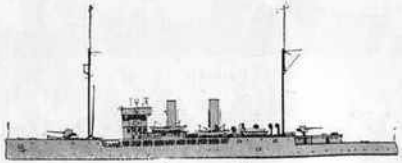
Twin Screw Minesweepers as Tenders.

HERALD (3), MORESBY. (R.A.N.)

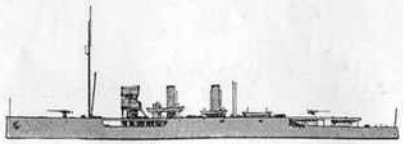


CHALLENGER.

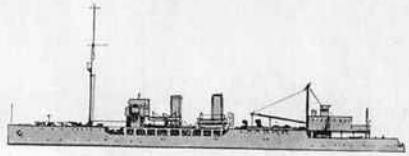
FLINDERS (4).



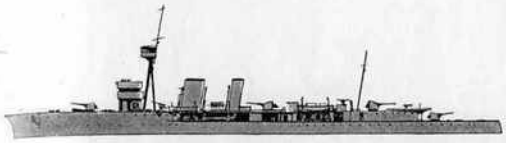
GODETIA (4).



CORNFLOWER.

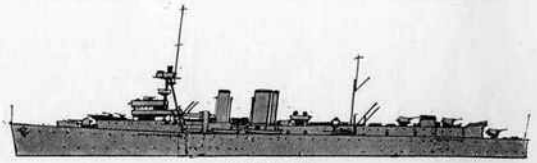


SNAPDRAGON.

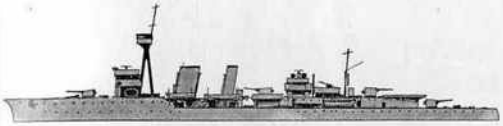


CAMBRIAN, CANTERBURY, CASTOR, CONSTANCE.

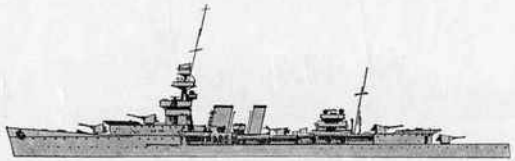
CERES, CARDIFF, COVENTRY, CURAÇOA, CURLEW.
(Note No. 2 gun on shelter deck forward.)



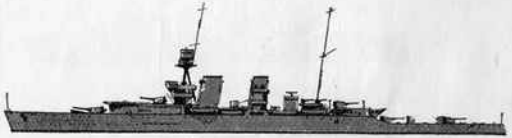
ADVENTURE.



CHAMPION. (S.L. Control Tower amidships.)

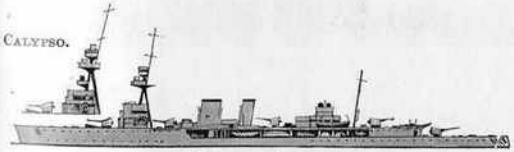


CAPETOWN, CAIRO, CALCUTTA, CARLISLE, COLOMBO.
(Trawler bow.)

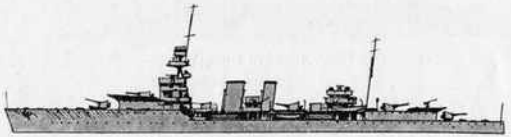


HAWKINS, EFFINGHAM.

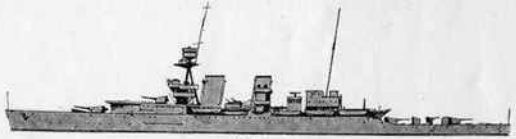
CALYPSO.



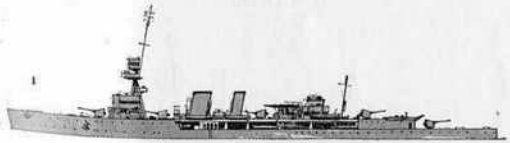
CARADOC, CALYPSO.



DANAE, DAUNTLESS, DRAGON.
(No. 3 gun abaft foremast.)



FROBISHER.

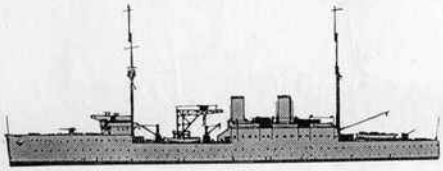


CALEDON.
(Note flight platform.)

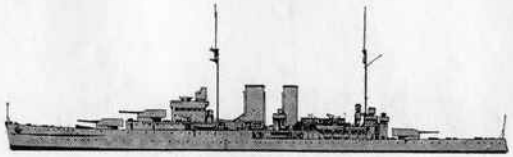
Diomede (note turret.)

DELHI, DURBAN, DESPATCH, DIOMEDE (N.Z.), DUNEDIN (N.Z).
(Trawler bow.)

VINDICTIVE.

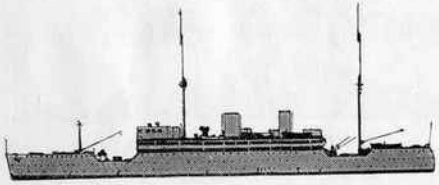


RESOURCE.



EXETER.

EAGLE.



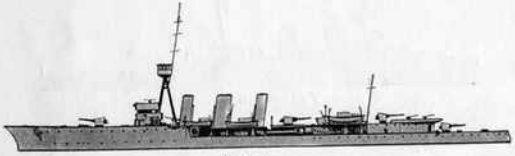
MEDWAY.

YORK.

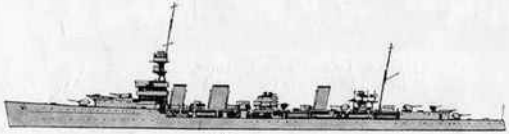
RENOWN, REPULSE.

ENTERPRISE (Note forward turret).

HOOD.

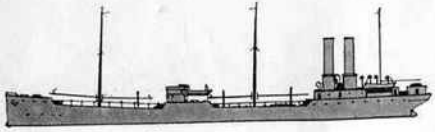


COMUS.



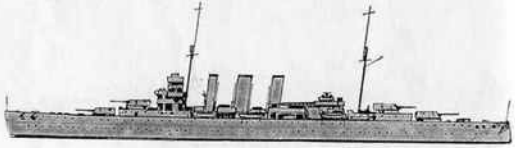
EMERALD.

IRON DUKE.

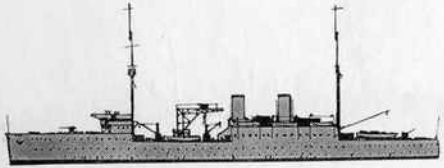


DELPHINULA.

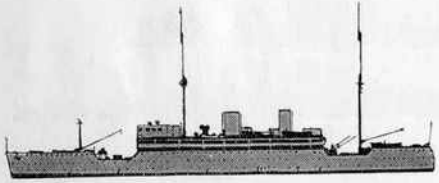
DORSETSHIRE, NORFOLK, SUSSEX, DEVONSHIRE, LONDON, SHROPSHIRE.
(Note position of main mast.)



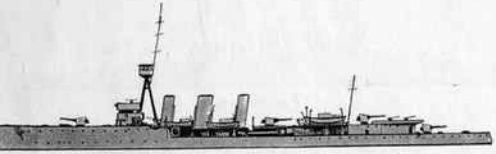
BERWICK, CORNWALL, CUMBERLAND, KENT, SUFFOLK.



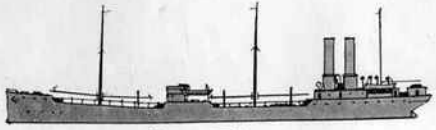
RESOURCE.



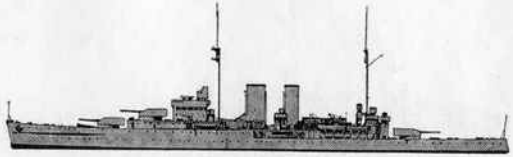
MEDWAY.



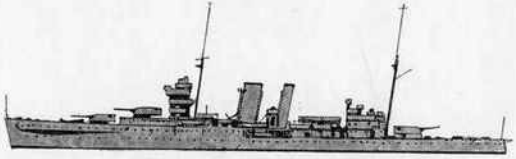
COMUS.



DELPHINULA.

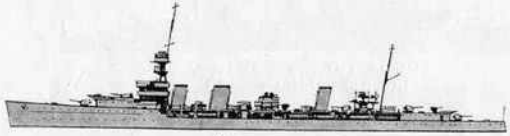


EXETER.



YORK.

ENTERPRISE (Note forward turret).



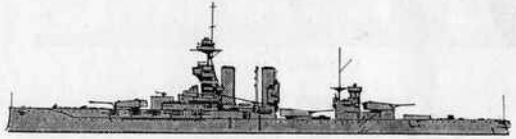
EMERALD.

DORSETSHIRE, NORFOLK, SUSSEX, DEVONSHIRE, LONDON, SHROPSHIRE.
(Note position of main mast.)

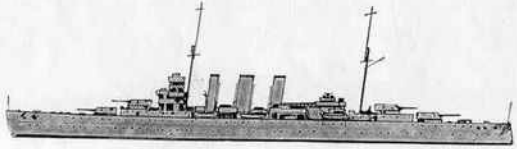
EAGLE.

RENOWN, REPULSE.

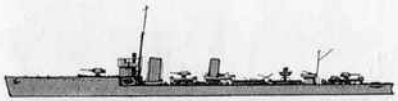
HOOD.



IRON DUKE.



BERWICK, CORNWALL, CUMBERLAND, KENT, SUFFOLK.

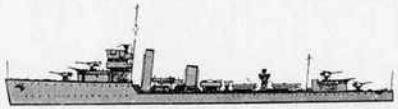


TYRANT.

VICEROY, VISCOUNT, WOLSEY, WOOLSTON.

"A" and "B" *class.*

"S" *class.*



"V" and "W" *classes* (46).

"C" and "D" *class.* (Note bridge.)

CODRINGTON (*Leader*).

VETERAN, WILD SWAN, WIVERN, WHITSHED, WITHERINGTON, WOLVERINE, WORCESTER.

BRUCE, CAMPBELL, MALCOLM, DOUGLAS, MACKAY, MONTROSE (*Leaders.*)

WISHART, WITCH.

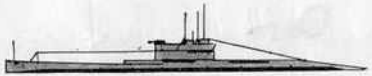
BORKE, KEPPEL, SHAKESPEARE, SPENSER, WALLACE. (*Leaders*).

AMAZON, AMBUSCADE.

Admiralty "R" *class* (9).

SUBMARINES.

H *Class*



L 16—27.

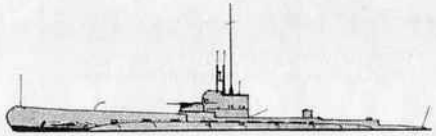
Porpoise

L 14, L 17, L 25.

L 52—71.

X 1.

Swordfish *Class.*



"R" *Class.*

Oberon.

Thames

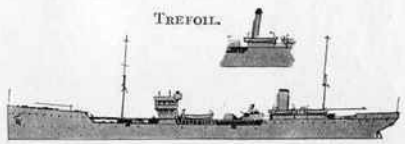
"P" *Class.*

Odin *Class* (6).
(Note bow.)

ATTENDANT, CAROL.

MIXOL, THERMOL.

BURMA.



TREFOIL.

TURMOIL.

BIRCHOL (8), DISTOL (5).
(Now have pole mast before funnel.)

WAR KRISHNA *type*.

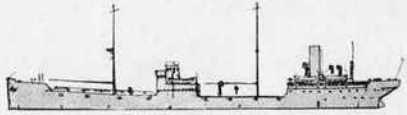
PETROLEUM.

PETROBUS *class* (3).

BRITISH BEACON *class* (4).

PLUMLEAF *type*.

DREDCOL.



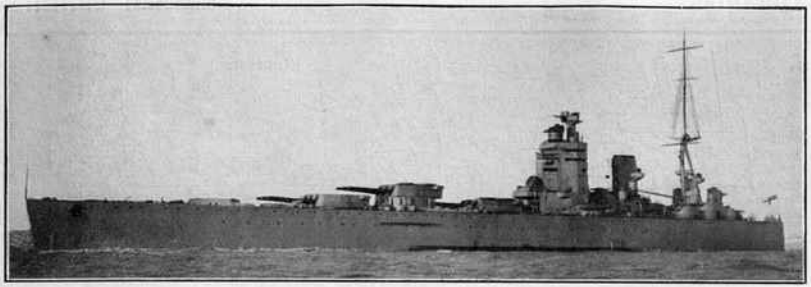
OLEANDER, OLNA.

BELGOL (6).

FRANCOL (3).

NUCULA. (N.Z.)

PERTHSHIRE.

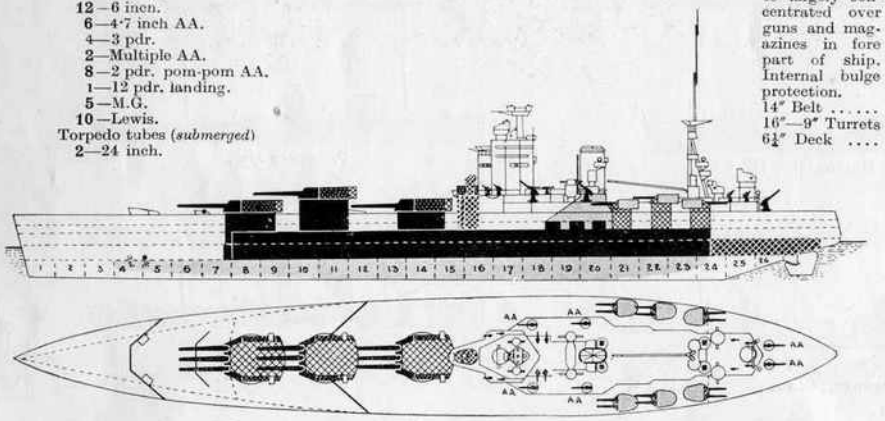


NELSON. (NELSON CLASS.) 1927 *Photo, Cribb.*

NELSON (September 3rd, 1925), **RODNEY** (December 17th, 1925).
Displacement, 33,500 tons (*Nelson*), 33,900 tons (*Rodney*), (*full load*, about 40,000 tons).
Length, (*p.p.*) 660 feet, (*w.l.*) 702 feet, (*o.a.*) 710 feet. Beam, 106 feet. *Mean* draught, 30 feet.
Complement, as flagship, 1361; as private ship, 1314.

Guns:
9—16 inch.
12—6 inch.
6—4·7 inch AA.
4—3 pdr.
2—Multiple AA.
8—2 pdr. pom-pom AA.
1—12 pdr. landing.
5—M.G.
10—Lewis.
Torpedo tubes (*submerged*)
2—24 inch.

Armour:
Is largely concentrated over guns and magazines in fore part of ship. Internal bulge protection.
14″ Belt .....
16″—9″ Turrets
6½″ Deck ....



Machinery: Geared turbines. Boilers: 8 Yarrow. Designed H.P. 45,000=23 kts. Oil fuel: 4000 tons. Consumption: full speed, 16 tons per hour; cruising speed, 2·7 tons per hour.

General Notes.—Both laid down under 1922-23 Estimates, being the last battleships designed by Sir E. Tennyson D'Eyncourt while D.N.C. They are reduced editions of the 48,000 ton battle-cruisers ordered in 1921 and cancelled under the Washington Treaty, in which 16″ gunned triple turrets were to have been mounted. Designed to Treaty limits which could not be exceeded, and yet must be approached as closely as possible, weight estimation and economy was a far more important factor than in previous designs. The grouping of the main armament forward allows for a minimum length of armoured citadel with maximum protection to hull and magazines, and is considered to more than compensate for the loss of fire astern. The design is therefore peculiar, in that it is governed more by constructional than tactical principles. By placing the boiler room abaft the engine rooms smoke interference with the control positions is obviated. The bridge structure carries the directors for the 16″, 6″ and AA. guns, admiral's bridge, torpedo controls, signalling and navigating bridges, sea cabins and offices. Special measures have been taken to protect personnel and instruments from the blast of the after guns when fired abaft the beam at full elevation.

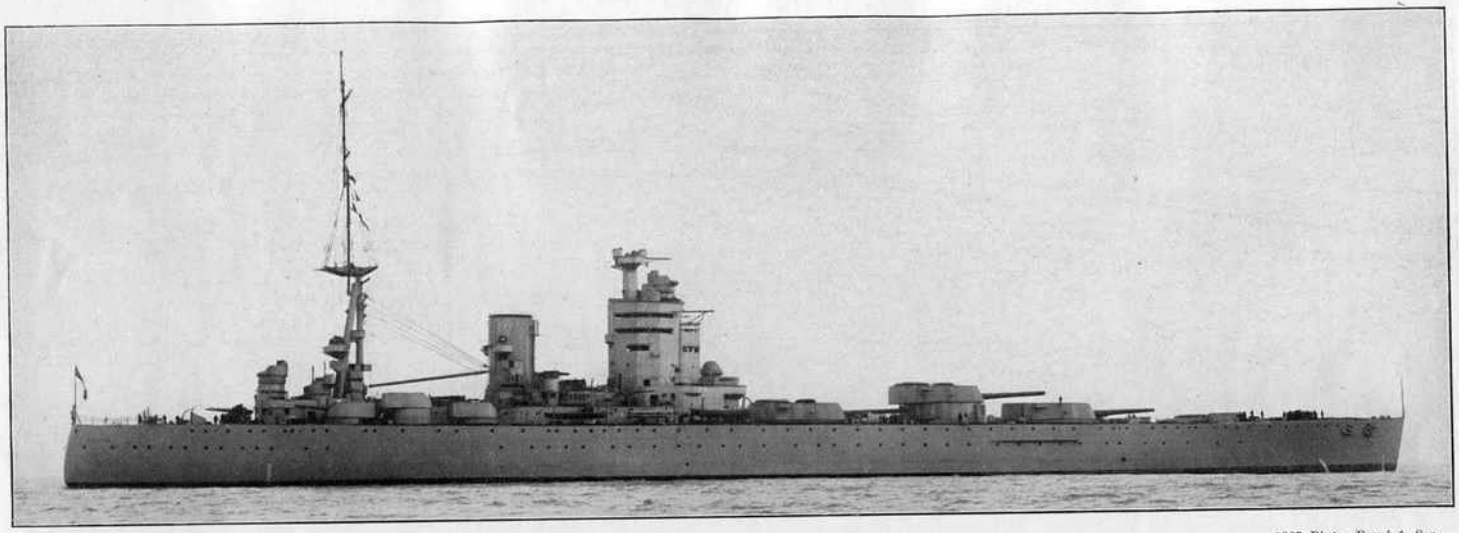
NELSON. 1927 *Photo, Frank & Son.*

Cost.—*Nelson* £7,405,269; *Rodney* £7,488,274. Annual upkeep with indirect personnel charges £432,960. Cost of guns and turret armour approx. £3,000,000; engines: £490,000. Steering gear is of novel design and rudder can be swung over in 30 secs. at full speed. Accommodation is on specially generous lines and all living spaces have natural lighting and ventilation.

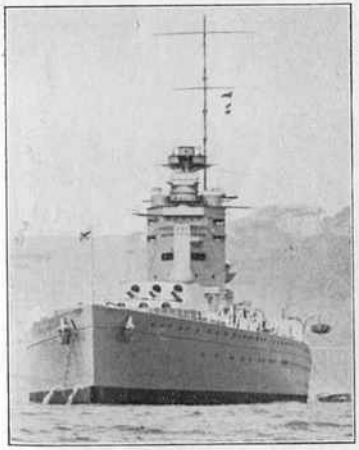
Gunnery Notes.—The 16″ gun is a new calibre in the Service. Elevation is 40° and range 35,000 yards. Cost of firing a triple salvo is £700. The 6″ guns have 60° elevation and can be used as AA. They are the first power worked 6″ guns in the Service. Multiple AA. guns are now mounted in these ships.

Armour Notes.—Citadel belt extends from foremost 16″ to aftermost 6″ turret, with thick armour deck over same area with specially designed hatches. Underwater protection is most efficient and the usual external bulges have been replaced by an alternative system of hull construction developed from a long series of experiments.

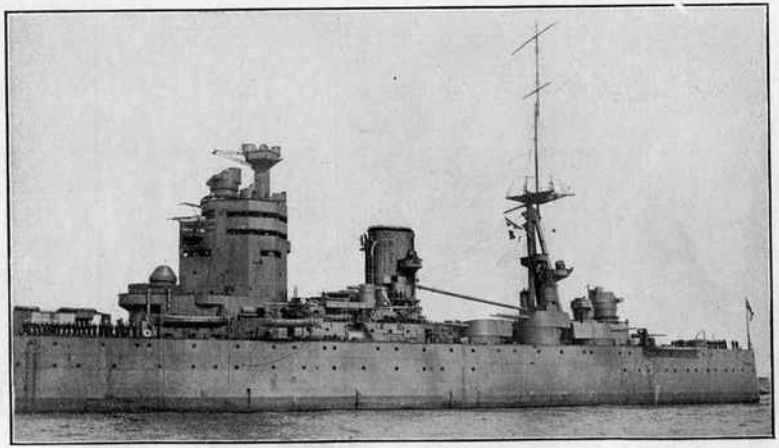
Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*
Nelson	Armstrong	Wallsend Co.	Dec, 28, 1922	June, 1927	46,000=23·5	Yarrow
Rodney	Cammell Laird	Cammell Laird		Aug., 1927	=23·8	



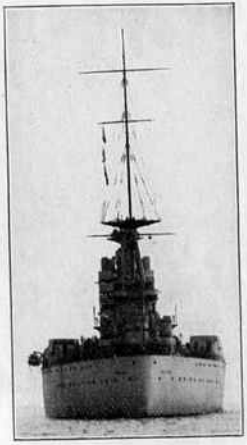
NELSON. 1927 *Photo, Frank & Son.*



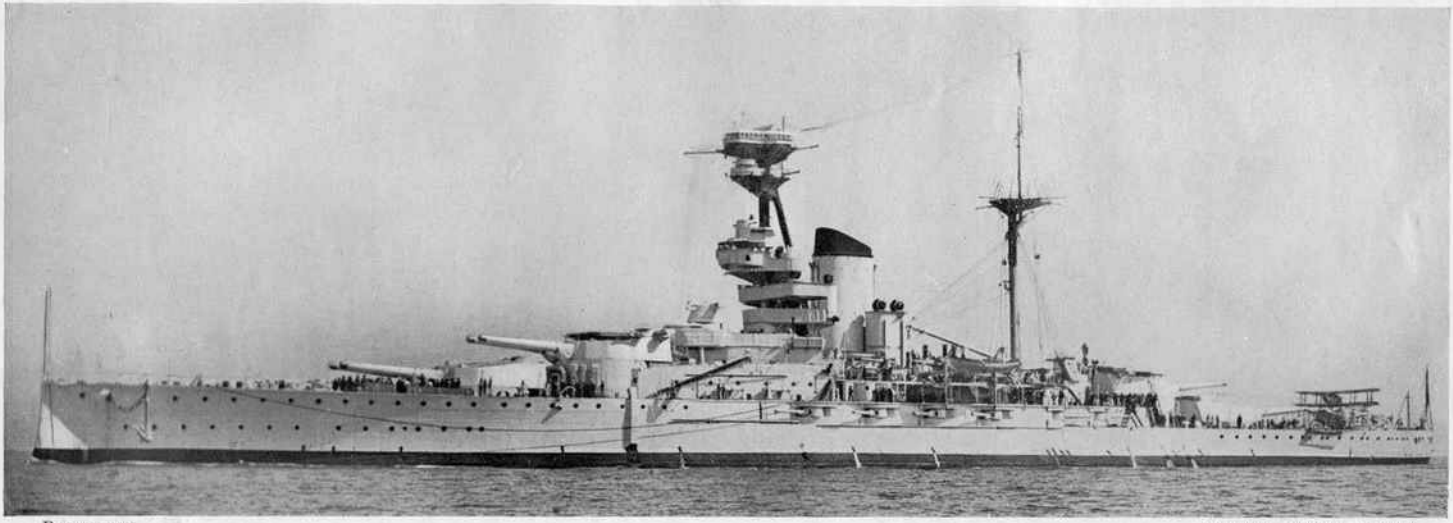
Bow view. 1929 *Photo, R. Perkins, Esq.*



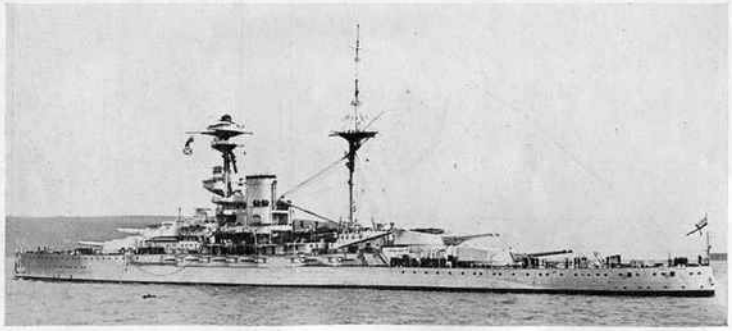
RODNEY. 1928 *Photo, C. Cozens, Portsmouth.*

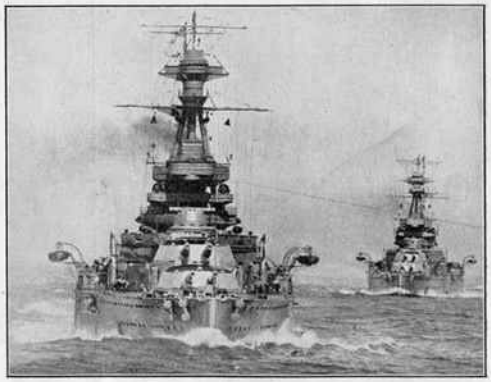


Stern view. 1927 *Photo, Frank & Son.*



RESOLUTION 1930 *Photo, Abrahams, Devonport.*





ROYAL OAK (bow). 1923 *Photo, Abrahams, Devonport*

1913-14 BATTLESHIPS.

(Royal Sovereign Class.)—All fitted as Flagships.

ROYAL SOVEREIGN (29th April, 1915), **ROYAL OAK** (17th Nov., 1914), **RESOLUTION** (14th Jan., 1916), **RAMILLIES** (12th Sept., 1916), **REVENGE** (29th May, 1915).

Displacement, 29,150 tons. Complement, 1009-1146.

Length (*p.p.*) 580 feet, (*w.l.*) 614½ feet, (*o.a.*) 620½ feet.† Beam, about 102½ feet. *Mean* draught, 28½ feet.

†*Revenge* 624½ feet (*o.a.*)

Guns:
- 8—15 inch, 42 cal. } Dir. Con.
- 12—6 inch, 50 cal. }
- 4—4 inch (anti-aircraft)
- 4—3 pdr.
- 1—12 pdr. Field
- 5 M.G.
- 10 Lewis

Torpedo tubes (21 inch):
- 4 *submerged*.
- (2 only in *Revenge* and *Resolution*.)

Armour (H.T.):

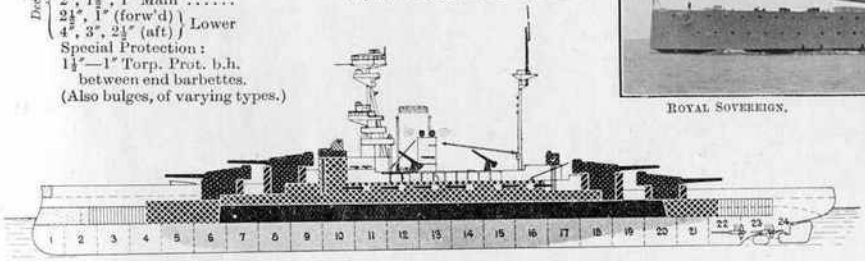
Deck.
- 1″ Fo'xle over Battery
- 1½″—1½″ Upper
- 2″, 1½″, 1″ Main
- 2½″, 1″ (forw'd) } Lower
- 4″, 3″, 2½″ (aft) }

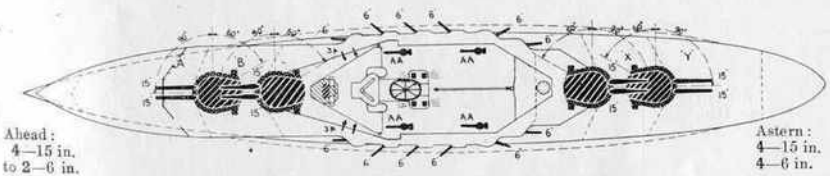
Special Protection:
- 1½″—1″ Torp. Prot. b.h. between end barbettes.
- (Also bulges, of varying types.)

Armour (K.C.):

Vertical.
- 13″ Belt
- 6″—4″ Belt (ends)
- 1″ Belt (bow)
- 6″, 4″ Bulkheads(f. & a.)
- 6″ Battery
- 10″—7″ Barbettes
- 13″—5″ Gunhouses
- 1½″ Funnel uptake
- 6″—3″ C.T. Base
- 11″ C.T. (6″—3″ hood)
- 6″ Fore com. tube
- 6″ Torp. con. tower
- 4″ Tube (T.C. tower)

Aircraft:
Royal Sovereign—1 Fairey III F.





Ahead: 4—15 in. to 2—6 in.

Astern: 4—15 in. 4—6 in.

Broadside: 8—15 in., 6—6 in., 2—21 in. tubes.

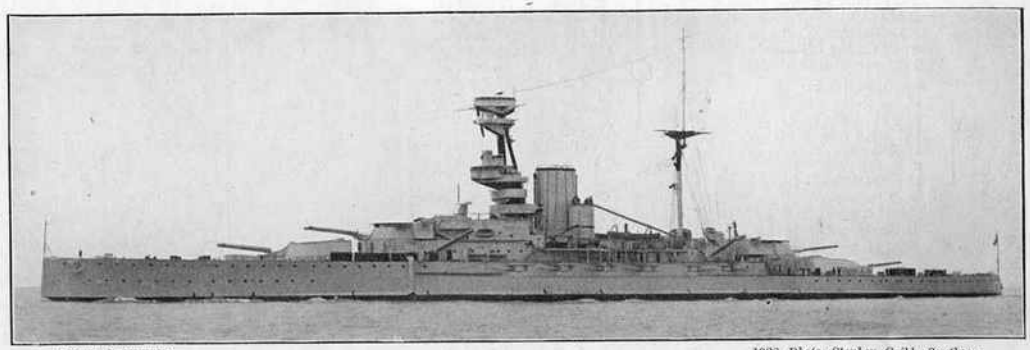
Machinery: Turbine, Parsons. Boilers: (see *Notes*). 4 screws. Designed H.P. 40,000= 23 kts. *without* bulges, about 22 *with* bulges. Fuel: Oil only, *normal*, 990 tons; *maximum*, 3,230 tons. Coal: 140 tons (for culinary purposes and boats).

Gunnery Notes.—Much as *Queen Elizabeth* class. Battery differently disposed in these ships. 6 inch batteries are wet in head seas, but dwarf walls in battery retain water and it is rapidly drained away. 4 inch AA. mounted in place of former 3 inch AA. in most of class, 1924-25. Two superstructure 6 inch removed in 1927-28.

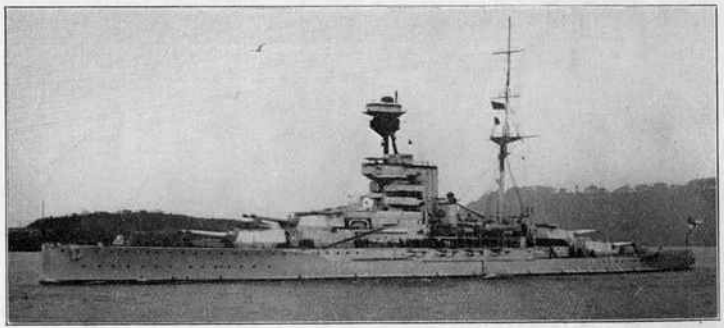
Armour Notes.—Thicknesses much as *Queen Elizabeth* class, but armour differently distributed. Barbettes 6″—4″ as they descend behind belt. Gunhouses, 13″ face, 11″ sides and rear; crowns 5″. In these ships 2″ protective deck has a high 2″ slope behind belt, so that flat part of protection can be put on main deck and at top of belt, instead of a deck lower. Internal protection is very good, and with protective bulges, defence against underwater attack is very strong. *Royal Oak* refitted 1922-23, bulges now extending almost up to battery deck.

Engineering Notes.—Designed to burn coal, but while building "all oil fuel" was adopted, so that 23 kts. would be secured with the resulting increase of H.P. Addition of bulges has brought speed down again to about 22 kts.

General Notes.—Begun under 1913-14 Estimates. *Revenge* first named *Renown*. *Ramillies* injured herself at launch and was delayed in completion. They are fine ships, but suffer rather from reduced freeboard. Searchlights on main mast removed 1922. Refits: *R. Sovereign*, 1927-28; *Royal Oak*, 1922-24; *Ramillies* and *Resolution*, 1926-27; *Revenge*, 1928; *Resolution* 1930. All to have catapult fitted on quarter deck.



Royal Sovereign. 1928 *Photo, Stephen Cribb, Southsea.*



Revenge. 1929 *Photo, Abrahams & Son, Devonport.*

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials:—*	*Boilers*
Royal Sovereign	Portsmouth Y.	Parsons	Jan.'14	May, '16	41,115=21·6	18 Babcock
Royal Oak	Devonport Y.	Hawthorn	Jan.'14	May, '16	40,360=	18 Yarrow
Resolution	Palmer	Palmer	Nov.'13	Dec., '16	41,406=	18 Yarrow
Ramillies	Beardmore*	Beardmore	Nov.'13	Sept. '17	42,356=21·5	18 Babcock
Revenge	Vickers	Vickers	Dec.'13	Mar., '16	42,962=21·9	18 Babcock

*Towed to Liverpool and completed by Cammell Laird & Co.

(Queen Elizabeth Class.)

QUEEN ELIZABETH (16th Oct., 1913), **WARSPITE** (26th Nov., 1913), **VALIANT** (4th Nov., 1914), **BARHAM** (31st Dec., 1914), **MALAYA** (18th Mar., 1915).

Displacement, 31,100 tons Complement, 1124-1184. All fitted as flagships.

Length (*p.p.*), 600 feet. Beam, 104 feet { *Mean* draught, 30⅔ feet. / *Max.* „ 33½ „ } Length (*o.a.*) { *B., W.* 643¾ ft. / *Q.E., M., V.* 639¾ ft. } (*w.l.*) 634½ feet.

Guns:
- 8—15 inch, 42 cal. } Dir. Con.
- 12—6 inch, 50 cal. }
- 4—4 inch AA.
- 4—3 pdr.
- 1—12 pdr. Field.
- 5 M.G.
- 10 Lewis.

Torpedo tubes (21 inch):
- 2 *submerged* (broadside).

Armour (H.T.):

Deck.
- 1″ Fo'xle (over battery).
- 2″—1¼″ Upper .....
- 1¼″ Main fwd. & aft...
- 1″ Middle .....
- 3″ (ends) } Lower.
- 1″ (amidships) }

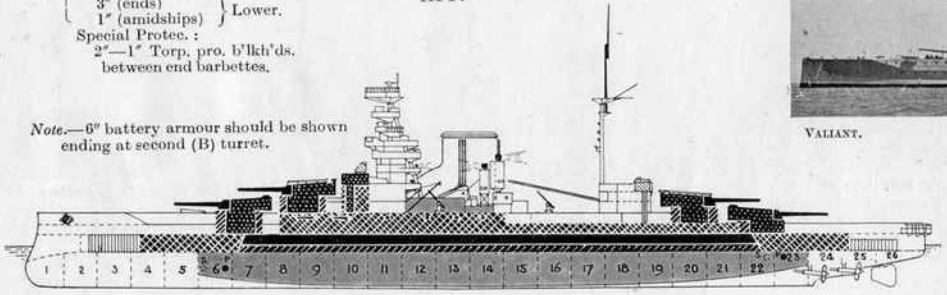
Special Protec.:
- 2″—1″ Torp. pro. b'lkh'ds. between end barbettes.

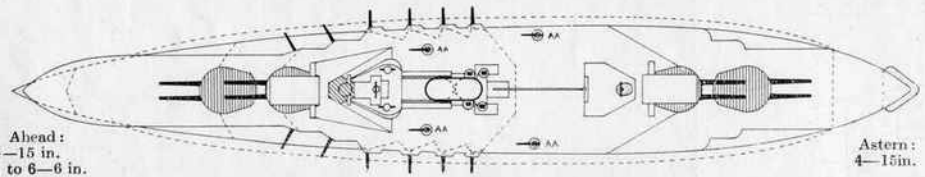
Vertical.

Armour (K.C.):
- 13″ on waterline .. } Side
- 6″—4″ over w.l. .. }
- 6″—4″ (ends) .... }
- 6″, 4″ Bulkheads (f. & a.)
- 6″ Battery .....
- 0″—7″ Barbettes .....
- 11″ Gunhouses .....
- 11½″ Funnel uptakes ...
- 6″—3″ C.T. base .....
- 14″ C.T. (6″—2″ Hood)..
- 4″ Fore com. tube ....
- 6″ Torpedo C.T. .....

Aircraft:
- Valiant & Barham—1 Fairey III F.

Note.—6″ battery armour should be shown ending at second (B) turret.





Ahead:
4—15 in.
3 to 6—6 in.

Astern:
4—15in.

Broadside: 8—15 in., 6—6 in., 2—21 in. tubes.

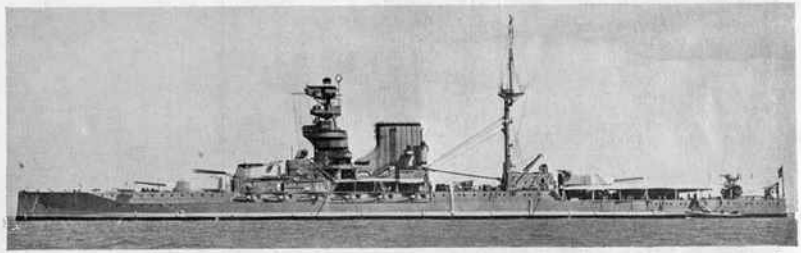
Machinery: Parsons turbine, but *Valiant* and *Barham* have Brown-Curtis. Geared cruising turbines in all ships. Boilers: 24 large tube (see *Notes*). Designed H.P. 75,000=25 kts. Fuel: Only oil, 650 tons *normal*, 3400 tons *max*. Coal: 100 tons, for culinary purposes and boats. Radius of action: *about* 4400 miles.

General Notes.—First four begun under 1912 Estimates. *Malaya*, extra ship, gift of Federated Malay States. Estimated cost (average), exceeds £3,000,000 per ship. (*Q. E.* cost £3,014,103.) Annual upkeep=£170,416 per ship. *Q.E., Barham* and *Warspite* have stern walks. Re-construction includes the remodelling of control top and bridgework, addition of bulges of a modified pattern, the trunking of the forefunnel into the second, and the doubling of the anti-aircraft armament. Two Torpedo tubes removed during last refit.

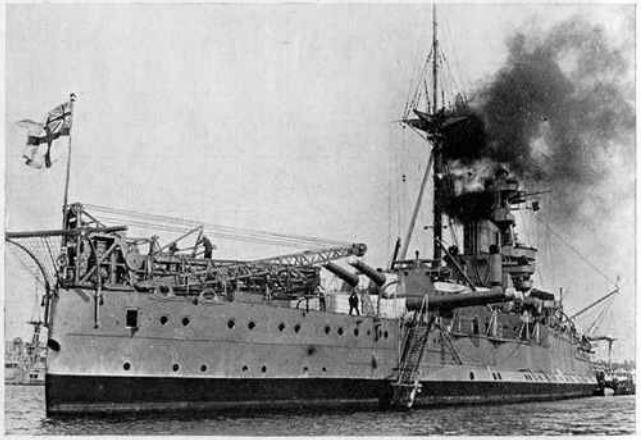
Gunnery Notes.—15 inch guns and mountings designed for 20° elevation. 6 inch controlled in two groups from director towers on middle bridges. Anti-aircraft armament is being doubled as ships are refitted

Armour Notes.—Belt is 13″ at w.l. only, 6″ on upper edge, 8″ on lower, and applied in vertical strakes. Barbettes, 6″ and 4″ within belt. 1½″ traverses to battery, but no rear screens—only dwarf walls to retain and drain away water admitted to battery. Rear bulkhead to battery is 6″ diagonal and 4″ where it crosses centre line. Internal protection of these ships is very good. All this class are fitted with bulges.

Engineering Notes.—"All oil" installation very successful. These ships steam splendidly, and can maintain a high average speed for long periods. H.P. turbines on wing shafts, with cruising turbines geared at forward end; L.P. turbines on inner shafts.

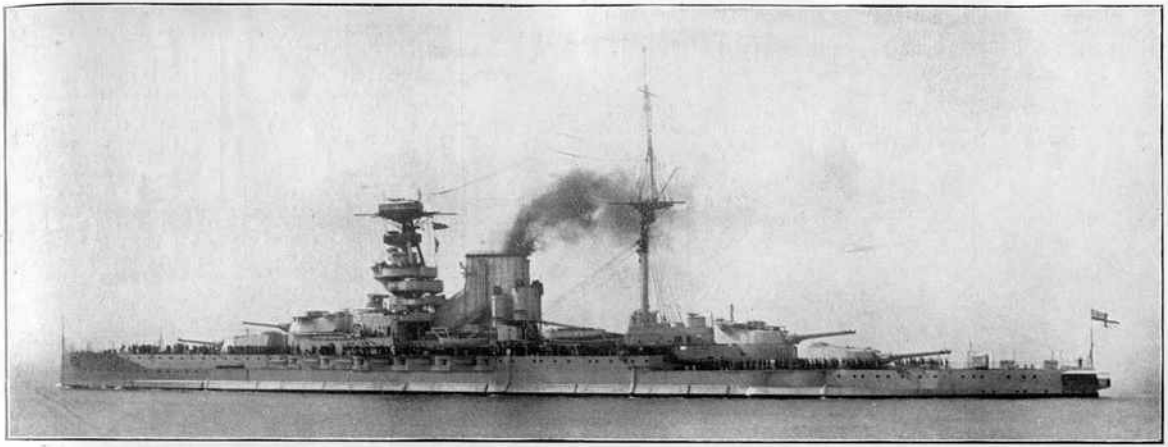


VALIANT. 1930 *Photo, R. Perkins, Esq.*



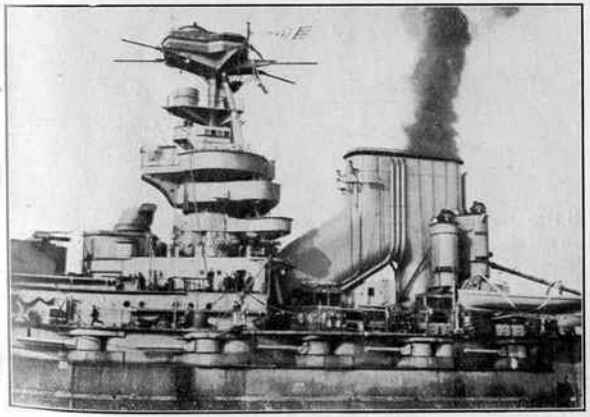
VALIANT. 1933 *Photo, R. Perkins, Esq.*

Name.	*Builder.*	*Machinery.*	*Laid down.*	*Completed.*	*Trials.*	*Boilers.*
Queen Elizabeth	Portsmouth	Wallsend	Oct.'12	Jan., '15	57,130=	24 Babcock
Warspite	Devonport	Hawthorn	Oct.'12	Mar., '15	77,510=	24 Yarrow
Valiant	Fairfield	Fairfield	Jan.'13	Feb., '16	71,112=	24 Babcock
Barham	Clydebank	Clydebank	Feb.'13	Oct., '15	76,575=	24 Yarrow
Malaya	Elswick	Wallsend	Oct.'13	Feb., '1[illegible]	76,074=	24 Babcock

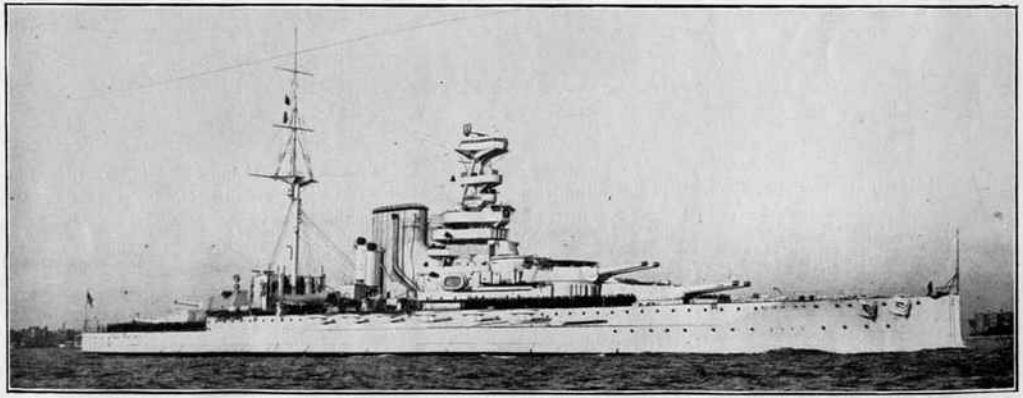


WARSPITE. 1926 *Photo, Cribb.*

Q. ELIZABETH. 1930 *Photo, R. Perkins, Esq.*



WARSPITE. Details of control top, bridgework and funnel. 1926 *Photo, Cribb.*



QUEEN ELIZABETH. 1928 *Photo, Cribb.*

1916 BATTLE CRUISER.

Guns:
8—15 inch, 42 cal. } Dir. Con.
12—5·5 inch, 50 cal. }
2—4·7 inch AA.
4—4 inch (anti-aircraft.)
4—3 pdr.
1—12 pdr. Field.
5 M.G. and Multiple AA.
10 Lewis.
Torpedo tubes (21 inch)
2 *submerged* (P. & S.)
4 *above water* in pairs.
Aircraft:
1—Fairey III F.

HOOD* (J. Brown & Co., Clydebank. Begun 1st Sept., 1916, Launched 22nd August, 1918, completed 5th March, 1920.)

Displacement, 42,100 tons (46,200 tons *full load*). Complement, 1341.

Length { *p.p.* 810 ft. / *o.a.* 860 ft. 7 in. } Beam { *w.l.* / *outside bulges* 105 ft. 2½ in. } Draught { *mean* 28¼ ft. / *max.* 31½ ft.

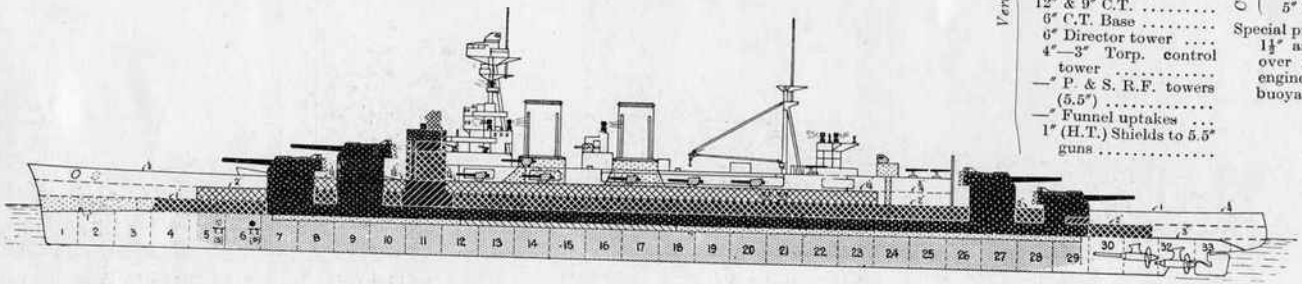
*Fitted as Flagship

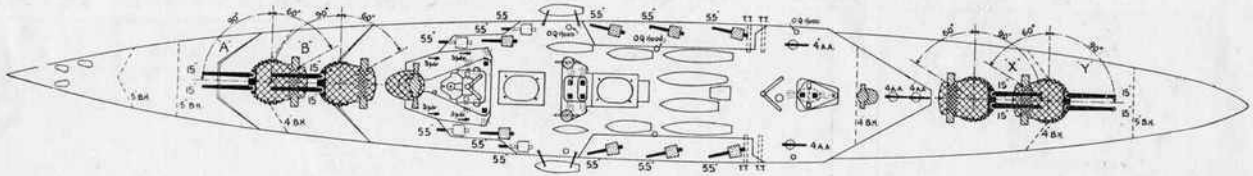
Notes to Plan.—Combined thicknesses of side armour and conning tower shown by dark patch in section 11. Now carries flagstaffs on both masts, with gaff on main.

Armour (K.C.):
Vertical:
3″ Side (submerged) ..
12″, 7″, 5″ Side (amidships) .....
6″—5″ Side (forward)..
6″ Side (aft).....
5″ 4″ Bulkh'ds (f. & a.)
12″— ″ Barbettes ....
15″ Face, 12″—11″ Sides } Turrets
12″ & 9″ C.T. .....
6″ C.T. Base .....
6″ Director tower ....
4″—3″ Torp. control tower .....
—″ P. & S. R.F. towers (5.5″) .....
—″ Funnel uptakes ...
1″ (H.T.) Shields to 5.5″ guns .....

Armour (H.T.):
Decks:
2″ Forecastle .....
1″ U.D. amidships ....
1½″—3″ Main deck ...
3″ M.D. over magazines
1½″—1″ L.D. forward
3″—1″ L.D. aft .....
Crowns:
3″ Director tower ....
5″ C.T. .....
3″ Torpedo control T.
5″ Turrets .....

Special protection (H.T.):
1½″ and ¾″ Torp. pro. b'lk'd over magazines, boiler and engine rooms, bulges and buoyancy spaces.





Ahead:
4—15 in.
6—5·5 in.

Astern:
4—15 in.

Broadside: 8—15 in., 6—5·5 in., 3—21 in. tubes.

Machinery (by Builders): Brown-Curtis (geared) turbines. 4 screws. Boilers: 24 Yarrow (small tube). Designed S.H.P. 144,000 = 31 kts. Fuel: Oil only. 1200 tons *normal*, 4,000 tons *maximum*.

Gunnery Notes.—Barbette heights over l.w.l.: A, 32 ft.; B, 42 ft.; X, 31½ ft.; Y, 21½ ft. All turrets bear 150° on each beam. Designed to mount 16—5.5 inch, but the four after guns were removed before completion. Elevation of 15 inch guns, 30°. 8—36 inch controlled, and 4—24 inch signalling S.L. Stem attachment for PVs. of new design. Guns, mountings, barbettes and ammunition = 5300 tons.

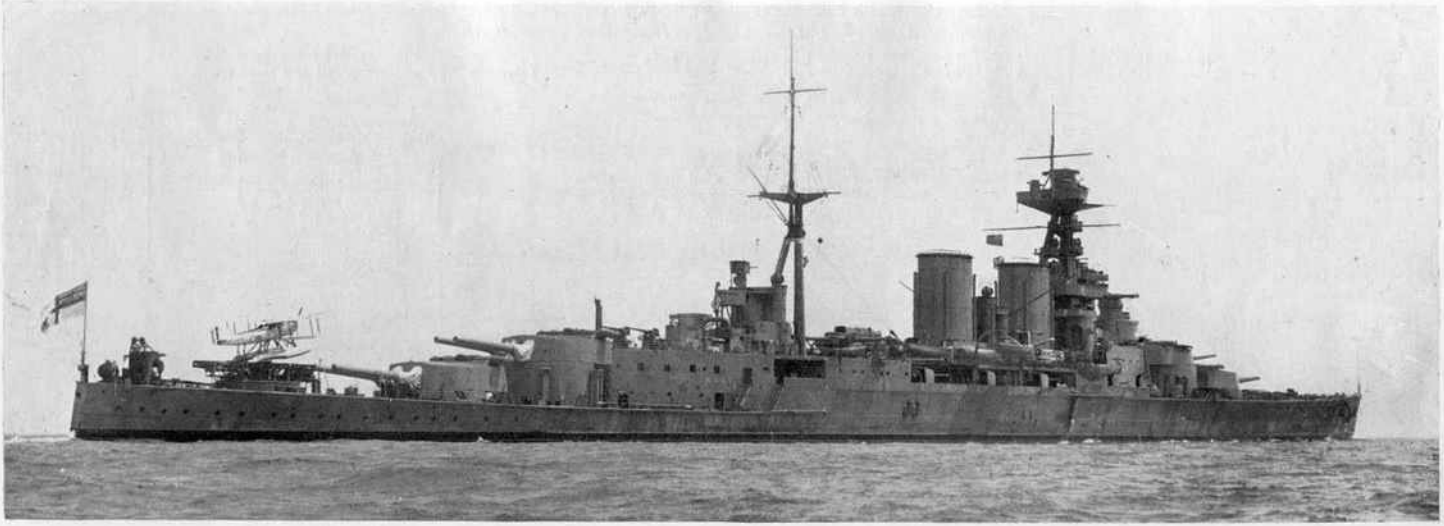
Armour Notes.—Vertical side armour is backed by strong 2″—1″ H.T. plating, not included in thicknesses given. Area of 12″ armour at w.l., 562 ft. long by 9½ ft. deep. Gun houses, new type with flat crowns, small square sighting ports cut low in face for laying over open sights. On roofs, armoured cases slightly wider than R.F. to allow R.F. to be traversed for fine adjustments. Barbettes, 6″—5″ as they descend through decks. C.T. is an enormous, elaborate, most expensive and ponderous structure: in upper stages, it consists of two shells, 12″ outer, 9″ inner, with narrow passage between. The slope inboard of hull side detracts from effects of plunging fire by virtual increase of armour thickness. A perpendicular, dropped from top sides, just meets outer edges of bulges, which are of the improved "D'Eyncourt-Hopkinson" type. Total weight of armour and protection, 13,800 tons.

Engineering Notes.—During world cruise, economical speed worked out at 288 miles in 24 hours on 180 tons of oil.

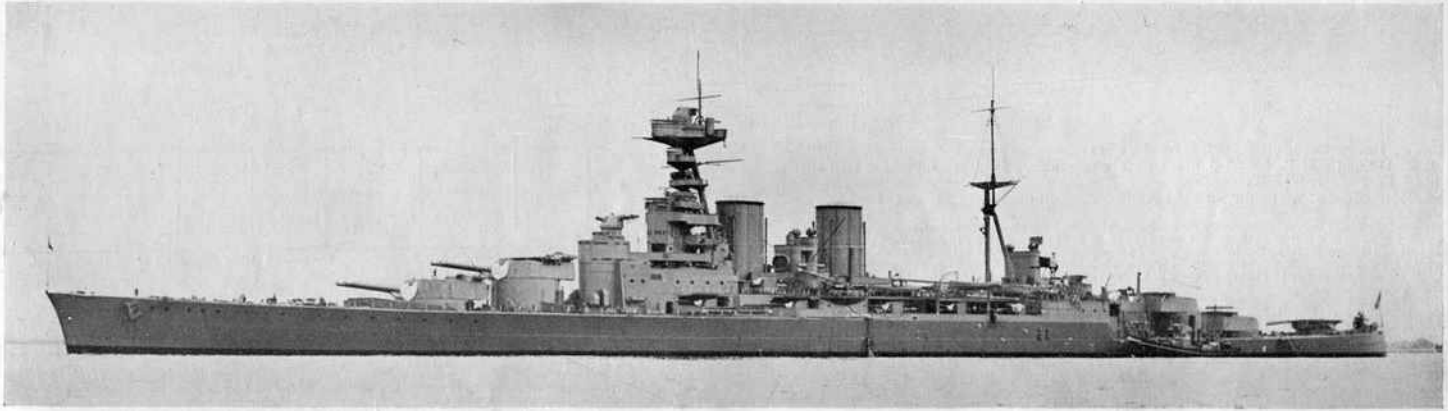
Trials (unofficial figures).—At 42,200 tons, 151,000 S.H.P. = 32.07 kts. (run in bad weather, wind force 6 Beaufort scale) on Arran mile. At 44,600 tons, 31.89 kts. *mean* attained. On ⅔ power, 25 kts. easily secured. Total weight of machinery (with water in boilers to working level) = 5,350 tons.

Notes on Original Design.—The original 1915 Design embodied same length and beam, but draughts were 25½ feet *normal* = 36,300 tons, and 29 feet deep. Speed: 32 kts. Belt 8″, barbettes 9″, much thinner deck armour, and only 2—21 inch *submerged* T. T. Four ships ordered to this design April, 1916. In the design produced after Jutland (not approved till 1917), 5,000 tons extra protection was worked in. By use of small-tube boilers, 24,000 S.H.P. gained on *same* machinery weights as for *Renown* class.

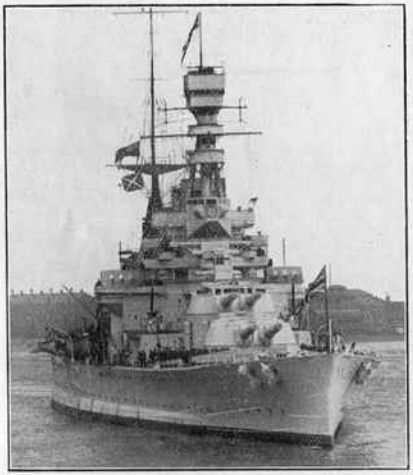
General Notes.—Begun under Emergency War Programme. Originally, there were four ships in this class, *Anson*, *Hood*, *Howe*, *Rodney*. They were begun in the autumn of 1916, to meet the German Battle Cruisers, *Graf Spee*, *Mackensen*, *Ersatz Freya* and *Ersatz "A."* which were laid down in 1916. Contractors were: *Anson* (Armstrong), *Howe* (Cammell Laird); *Rodney* (Fairfield), *Hood* (Brown). The enemy having ceased work on all his large ships, in 1917, *Anson*, *Howe* and *Rodney* were stopped in March, 1917, and dismantled to clear slips after the Armistice, but not before £860,000 had been expended on them. These ships were redesigned to meet the lessons of Jutland. In *Hood*, the outstanding feature is the huge areas covered by heavy armour, strong framing, &c.—in fact, the general scheme of protection is most comprehensive. Cost, *about* £6,025,000 = £145 per ton. Annual upkeep, £427,270. Due for replacement, 1941. General refit, 1929-30.



HOOD. 1931 *Photo, Wright & Logan.*

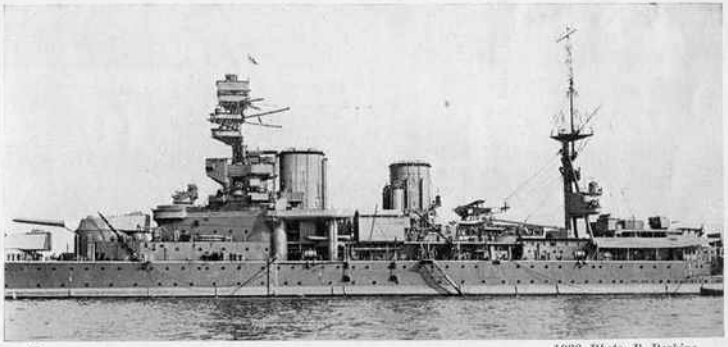


HOOD. 1931 *Photo, Kestin.*

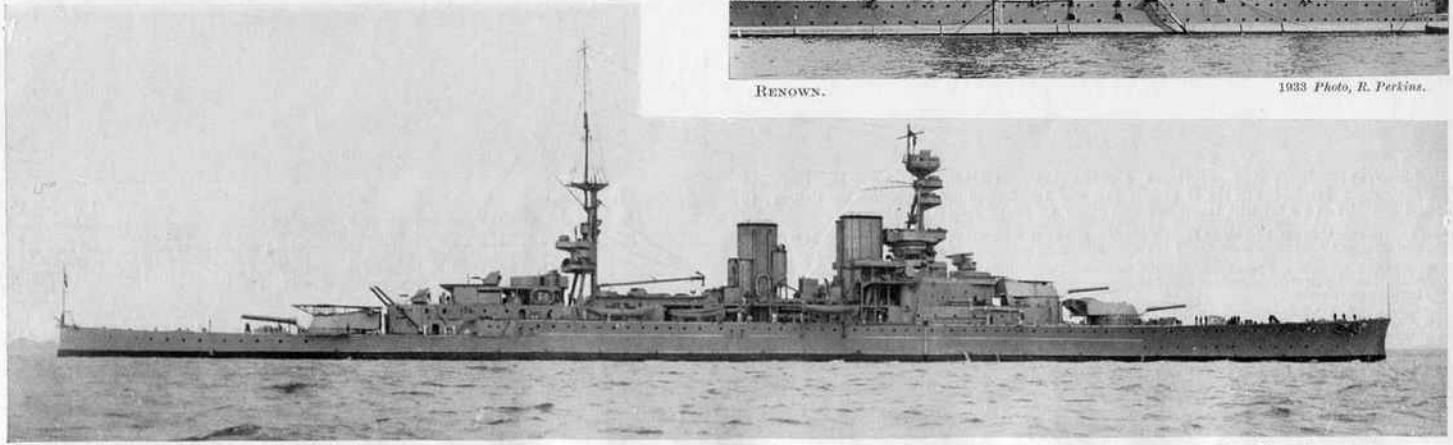


RENOWN. *Cribb.*

RENOWN 1933 *Photo, Cribb.*



RENOWN. 1933 *Photo, R. Perkins.*



REPULSE (now undergoing extensive refit). 1922 *Photo, Gieves, Ltd.*

AIRCRAFT CARRIER.

ARGUS (2nd Dec., 1917). Late Liner.

Displacement, 14,450 tons. Complement, 373.

Length, (*p.p.*) 535 feet (*w.l.*) 560 feet (*o.a.*) 565 feet.

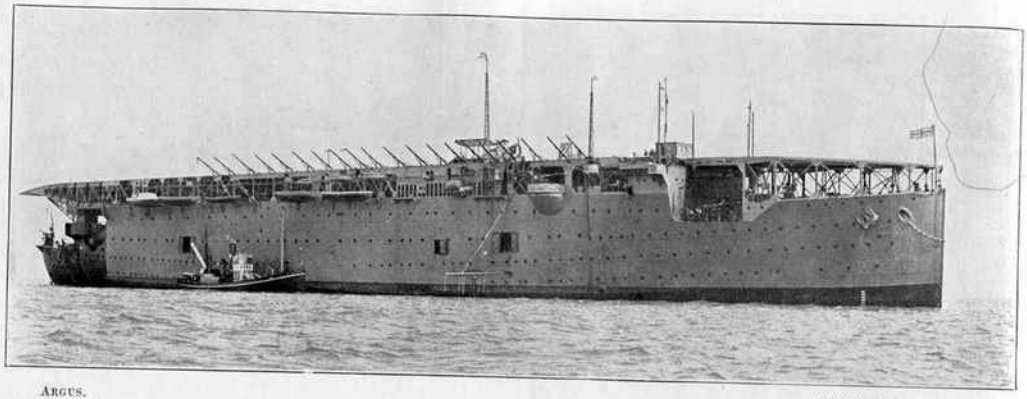
Beam, 68 feet (excluding bulges).

Draught, 21 feet, *mean*.

Guns:
6—4 inch AA.
4—3 pdr.
4 M.G.
10 Lewis.

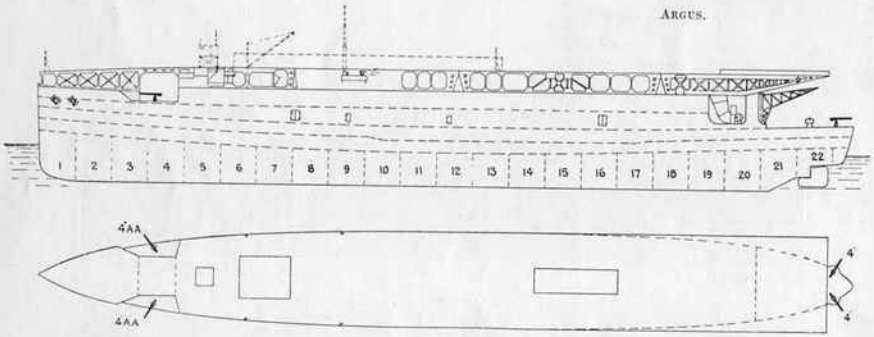
Flights carried:
None at present.

Armour:
Nil.
(Bulges—see *General Notes.*)



ARGUS.

1929 *Photo, R. Perkins, Esq.*

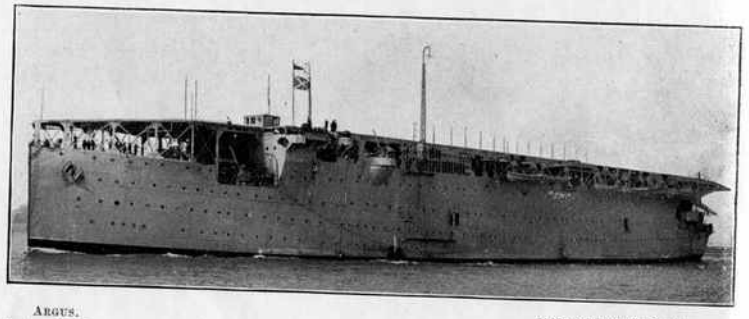


Machinery (by builders): Parsons turbines. 4 screws. Designed S.H.P. 20,000 = 20·2 kts. Can make 20·75 kts. for short periods, but 20 kts. is usually best speed under ordinary conditions. Boilers: 12 cylindrical (6 D.E. and 6 S.E.), with Howdens forced draught. Fuel: 2000 tons oil.

Capacity, &c.—Hangar is 350 ft. long by 68 ft. wide (*over all*) and 48 ft. clear width, 20 ft. clear height. It is divided into four sections by fire-proof screens, and can accommodate 20 aeroplanes of sea and land types.

Stores, &c.—Torpedoes are carried for torpedo-dropping aeroplanes; aero-bombs, spare parts, wings, propellers, &c. Full equipment is carried for maintenance and repair of aircraft. There are large carpenters' and engineers' workshops, for executing rapid repairs.

Handling Gear.—Two electrically controlled lifts for raising aircraft from hangar to flight deck. Forward lift, 30 ft. × 36 ft. After lift, 60 ft. × 18 ft. When forward lift is at flight deck level, two roller platforms slide to the sides and uncover well opening. When lift descends, the platforms are closed together and give a 20-ft. platform for flying off. When a deck load of aeroplanes is carried, wind-breaking palisades can be raised simultaneously to 14 ft. above flying deck. Two derricks with electric winches amidships on flight deck and two electric cranes at stern on hangar deck level: all to pick up aeroplanes from the water.



ARGUS.

1927 *Photo, Cribb, Southsea.*

Engineering Notes.—At the time designs were got out, a ¼ inch scale model was prepared for testing in the air tunnel at the National Physical Laboratory, Teddington, to solve various structural problems and to test eddy-making effects of hull. It was found that the emission of hot furnace gases from the usual type of funnels created such serious air disturbances, safe landings would be very difficult. Accordingly, horizontal smoke-duets with big expelling fans were fitted, to deliver all furnace gases and smoke out abaft hangar, or alternatively through flight deck. Designed for 18 kts., but modifications during conversion raised speed by 2 kts. Mean H.P. on trial, 21,376 = 20·5 knots. Now Material Reserve.

General Notes.—Begun 1914, by Beardmore, for Italian Lloyd Sabaudo Line, as S.S. *Conte Rosso*. All work on her ceased in 1914. She was purchased in 1916 and converted to Aircraft Carrier. Completed September, 1918. Refitted 1925-26, and Bulges fitted, extending from Section 4 to Section 19.

HERMES (11th September, 1919).

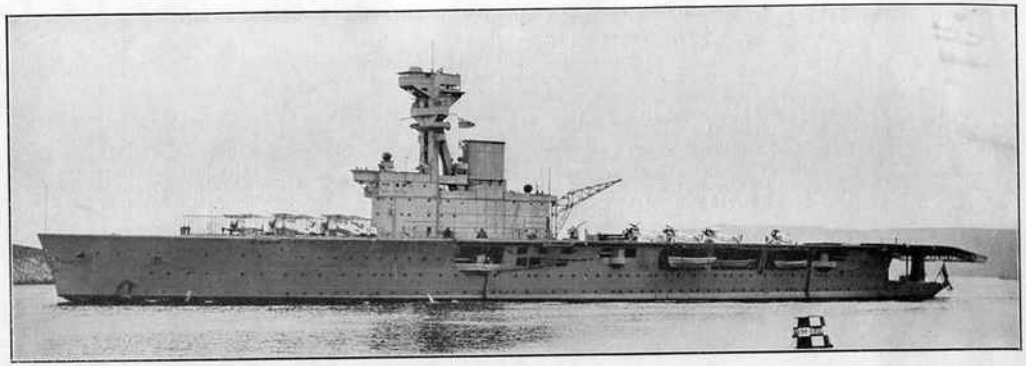
Displacement, 10,850 tons *normal*. Complement, 664.

Length { *p.p.* 548 feet / *o.a.* 598 „ } Beam { *w.l.* / outside bulges, 70 feet / over flight deck, 90 feet } Draught { *mean* 18¾ feet. / *max.* — „

Guns:
6—5·5 inch, 50 cal. (**Dir. Con.**)
3—4 inch AA.
26 Smaller.

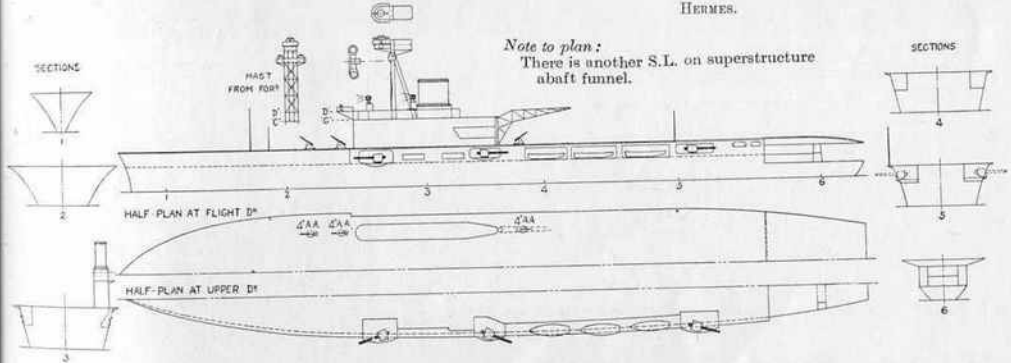
Flights carried:
None at present.

Armour:
Not known—probably of Light Cruiser type.
Anti-Torpedo Protection Bulges.



HERMES.

1924 *Photo, Abrahams, Devonport.*



Note to plan:
There is another S.L. on superstructure abaft funnel.

Machinery: Parsons (all geared) turbines. Designed S.H.P. 40,000=25 kts. 2 screws.
Boilers: Yarrow or Babcock. Fuel (oil only): 1000 tons *normal*. 2000 tons *max*.

Name	*Builder*	*Machinery*	*Ordered*	*Begun*	*Completed*	*Trials*
Hermes	Armstrong Whitworth Devonport D.Y.*	Parsons	July, '17	15 Jan., '18	1923	

* Towed here for completion, January, 1920.

General Notes.—Begun under Emergency War Programme. First vessel specially designed by Admiralty as an Aircraft Carrier. Is a splendid sea boat, very steady, with remarkably little rolling propensity.

To carry 20 sea or aeroplanes. Special ventilation system to lessen danger of fire from petrol fumes, and new types of gear for handling, landing and flying-off aircraft. Hangar aft, with electric lift from quarterdeck to flight deck, 'planes being wheeled out from hangar on to lift through an opening normally closed by shutters. Transporter cranes fitted forward and aft. Refit 1933-34.

HERMES (bow view). 1923 *Photo, Abrahams, Devonport.*

EAGLE (8th June, 1918), late Battleship.

Displacement, 22,600 (*deep load*, 26,200) tons. Complement, 748.

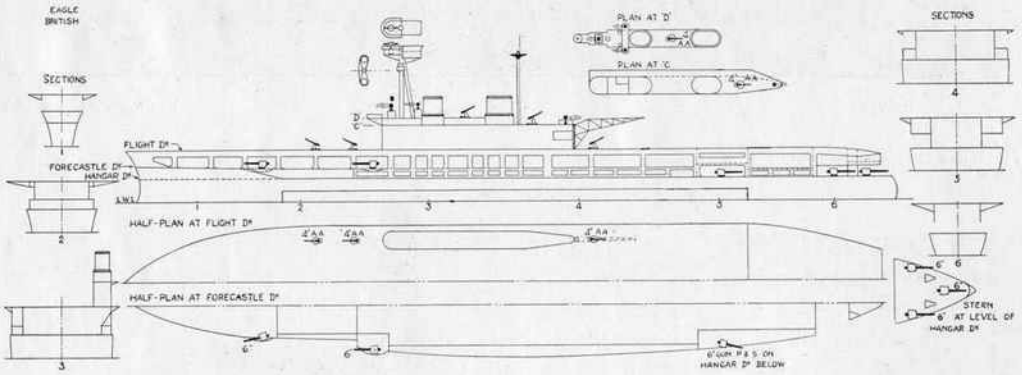
Length { (*p.p.*) 625 feet / (*o.a.*) 667 „ } Beam { 92¼ / 105¼ (*max.*) } feet.* Draught { 24 feet *mean.* / 27 feet *max.* }

* 100 feet, flight deck.

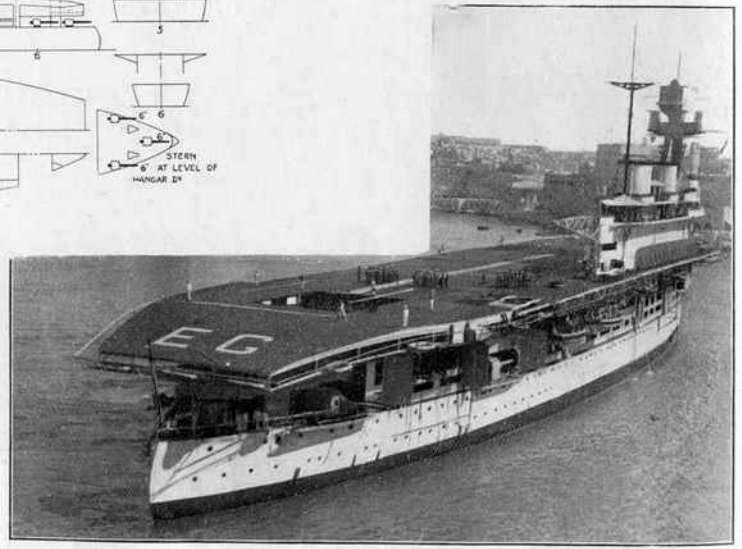
Guns:
9—6 inch, 50 cal. (**Dir. Con.**)
5—4 inch AA.
36 Smaller.

Aircraft Squadrons:
1 F (9 Osprey).
1 S.R. (12 Fairey III F).

Armour:
...″ Side (amidships).....
...″ Deck .....
Special protection:
Bulges over about four-fifths of length, projecting about 6 feet from side.



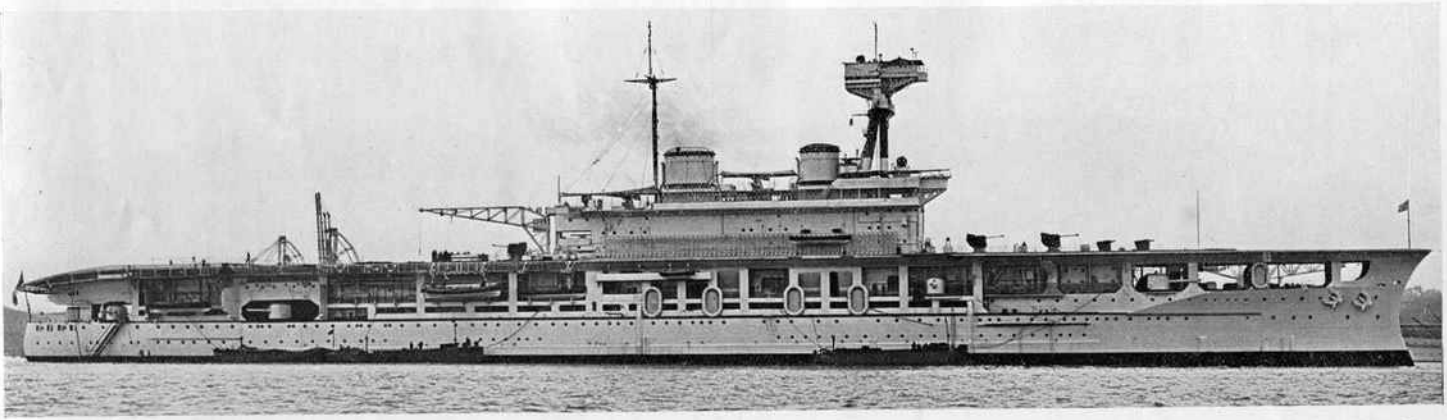
Bow view. 1924 *Photo, Abrahams, Devonport.*



EAGLE. 1927 *Photo, Cassar.*

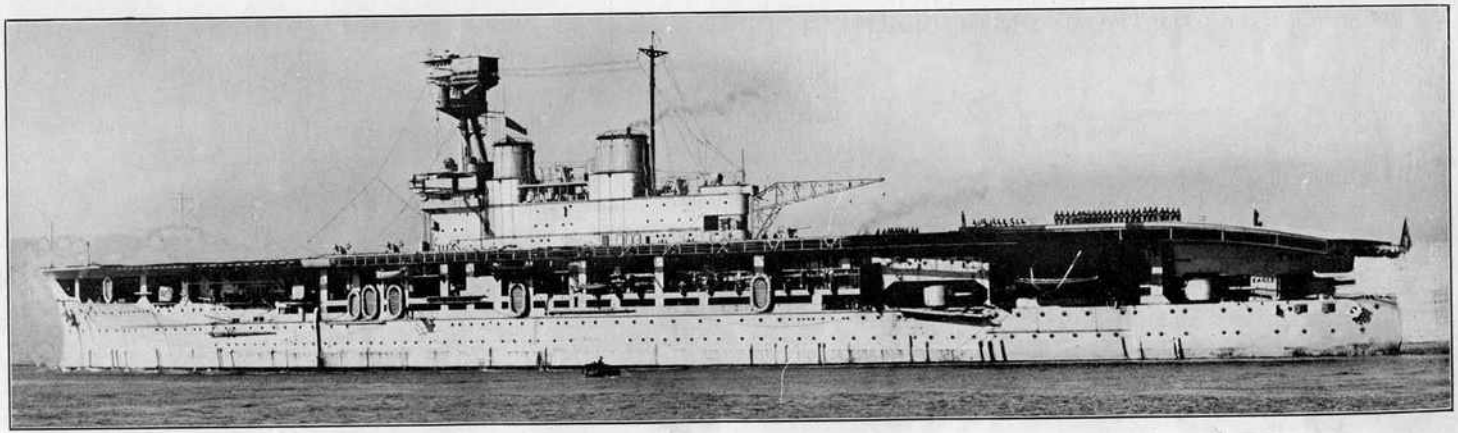
Machinery: Brown-Curtis (A.G.) turbines, by J. Brown & Co., Clydebank. Designed S.H.P. 50,000=24 kts. (No details available of trials). Boilers: 32 Yarrow small tube (oil burning). Fuel: *Normal*, 2500 tons; *maximum*, 3750 tons *oil fuel*.

General Notes.—Designed and begun by Armstrong Whitworth, February, 1913, for Chile, as *Almirante Cochrane*, a Dreadnought Battleship and sister to Chilean *Almirante Latorre*. All work on this ship ceased in August, 1914, and she lay on her slip until 1917, when her purchase was negotiated with the Chilean Government. Her design was modified to an Aircraft Carrier by Sir E. H. Tennyson d'Eyncourt. Commissioned for ship and flying trials with one funnel and no masts, 13th April, 1920. As a result of trials made off Scilly Islands, put in hand at H.M. Dockyard, Portsmouth, for modifications, November, 1923. Finally completed in 1923. Bought from Chile for £1,334,358, sums subsequently expended have raised total cost to £4,617,636 (Statement by First Lord, April 1927). Refit 1932.



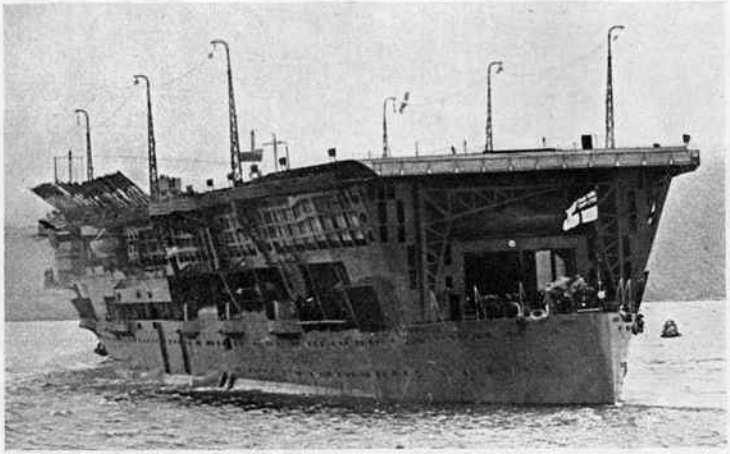
EAGLE.

1931 *Photo, R. Perkins, Esq.*

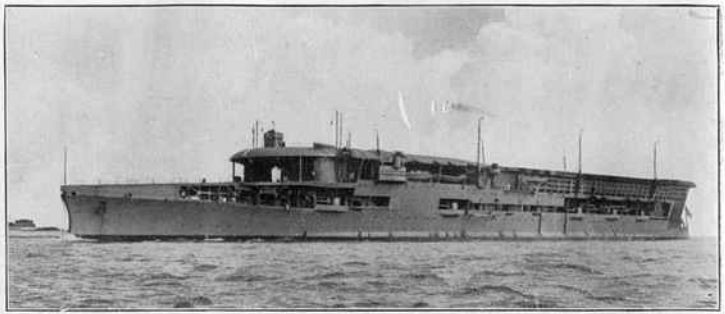


EAGLE

1924 *Photo, Abrahams, Devonport.*



FURIOUS. 1932 *Photo, R. Perkins, Esq.*



1926 *Photo, Cribb, Southsea.*

FURIOUS (15 August, 1916). Late Cruiser.
Displacement, 22,450 tons. Complement, 748. †
Length, (*p.p.*) 735 feet, (*o.a.*) 786¼ feet. *Beam, 89¾ feet. Draught { *mean* 21⅔ feet. *max.* 25 feet.

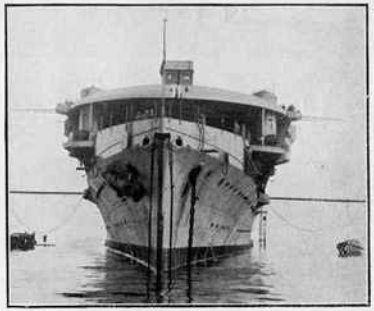
*Outside bulges.

Guns (**Dir. Con.**):
10—5·5 inch, 50 cal.
6—4 inch AA.
54 Smaller.
Aircraft Squadrons:
1x F (9 Nimrod or Flycatcher).
1 S.R. (12 Fairey III F).
1 T.B. (12 Ripon).
2 Torpedo (1 Dart, 1 Ripon II).

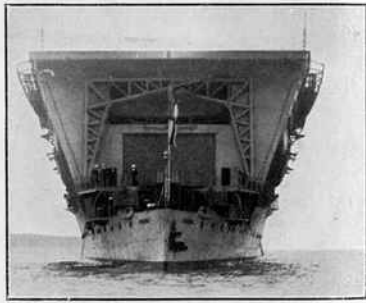
NOTE TO PLAN.
Quarter deck raised one deck during refit, 1931.

Armour:
3″ Belt (amidships).....
2″ Belt (bow). ....
3″—2″ Bulkheads F. & A.....
1″ Decks (H.T. at stern).....
3″—1½″ Decks (H.T. at stern)...
Anti-Torp. Pro.
Shallow bulges .....
1″ H.T. vertical. .....

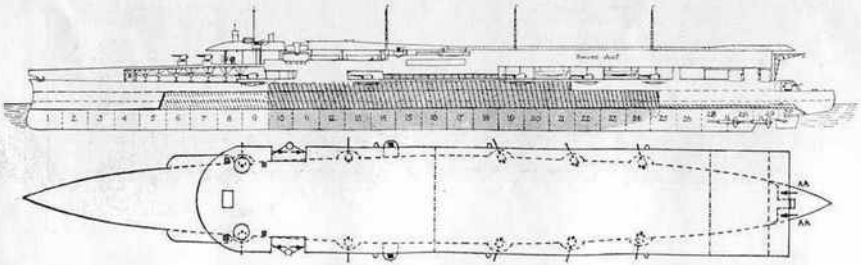
†With flying personnel added, complement is about 1100.



1926 *Photo, Cribb, Southsea.*



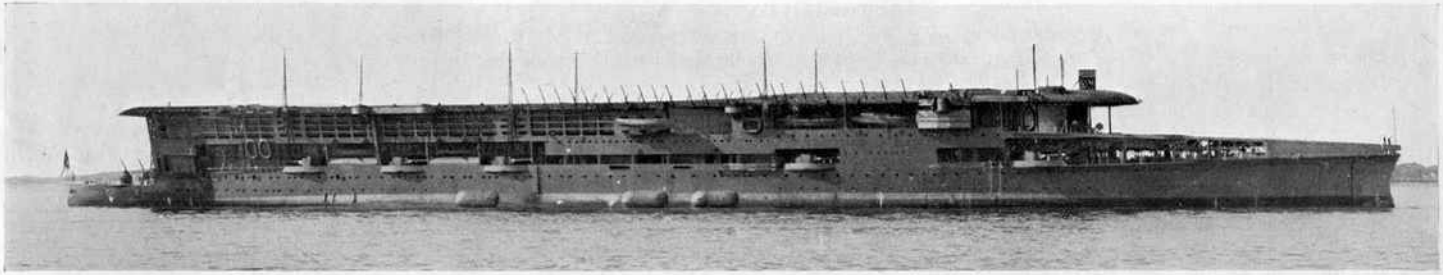
1926 *Photo, Cribb, Southsea.*



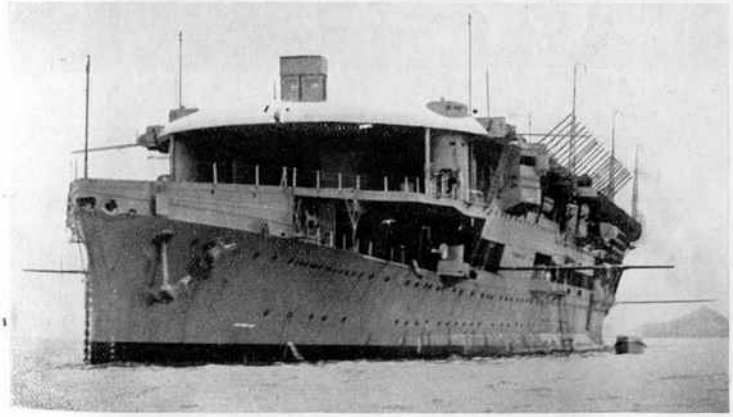
Machinery (by Wallsend Co.): Brown-Curtis (all geared) Turbines. 4 screws. Boilers: 18 Yarrow. Designed S.H.P. 90,000 = 31 kts. *Trials*: 90,820 = kts. Fuel (oil only): 4010 tons.

Armour Notes.—3″ Belt consists of 2″ plating over 1″ shell plating, as in Light Cruisers.

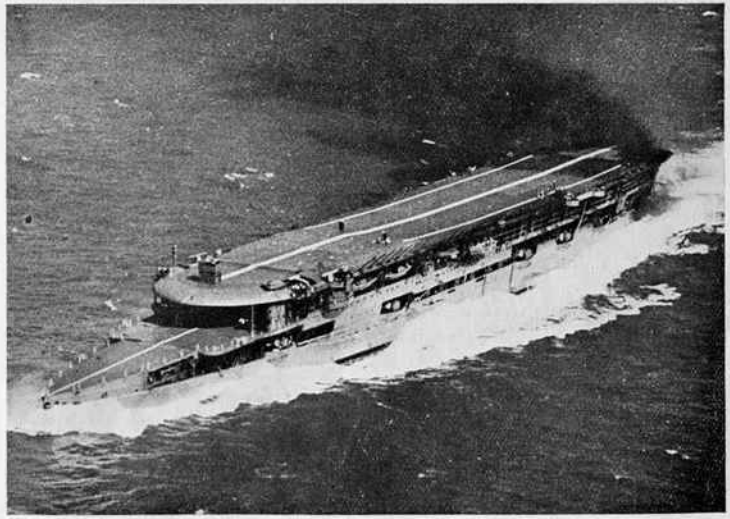
General Notes.—Built under Emergency War Programme, by Armstrong Whitworth. Begun June, 1915; completed July, 1917; re-built November, 1917, March, 1918. Designed as a modified *Courageous* but altered to Aircraft Carrier. Since conversion, she is said to be rather light, and is good now for 32-33 kts. Including cost of alterations, this ship is said to have absorbed over six million pounds. Underwent re-fit and alteration at H.M. Dockyards, Rosyth and Devonport, 1921-25, after which her appearance was completely altered, the funnel and mast being removed and a new hangar built forward. Smoke is discharged from vents at after end of hangar, or alternatively through flight deck, which measures 700×80 feet. Height of flight deck from water line is 75 feet. There are 2 hydraulic lifts from hangars to flight deck.



FURIOUS (quarter deck was raised a deck 1931). 1931 *Photo, R. Perkins, Esq.*



FURIOUS. 1931 *Photo, R. Perkins, Esq.*



1931 *Photo.*

AIRCRAFT CARRIERS.

(Courageous Class—2 Ships).

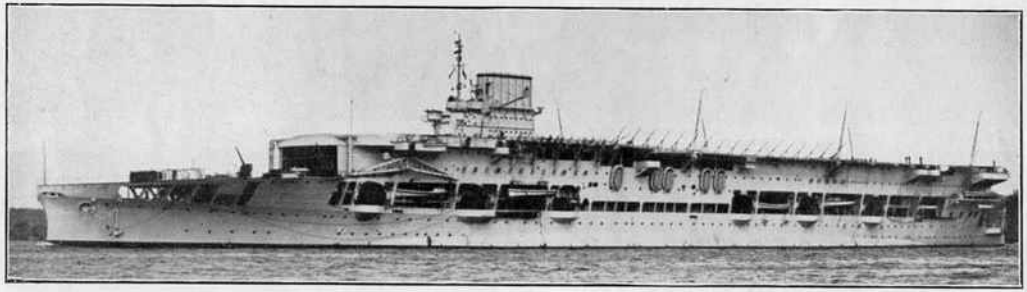
COURAGEOUS (5th February, 1916), **GLORIOUS** (20th April, 1916). (Late Cruisers.)

Displacement, 22,500 tons Complement, 748 (with flying personnel included, *about* 1100).

Length { *p.p.* 735 ft. / *o.a.* 786¾ ft. } Beam (outside bulges), 81 ft. Draughts { *mean* 22¾ ft. / *max.* 26 ft.

Guns:
16—4·7 inch HA. and LA.
4—3 pdr.
50 Smaller.

Aircraft Squadrons:
"Courageous"
1 F (Nimrod or Osprey).
1 S.R. (9 Seal).
1 S.R. (9 Fairey III F).
1 T.B. (Dart or Ripon).
"Glorious"
1 F (Nimrod or Osprey).
1 S R. (Fairey III F).
1 T.B. (Ripon).



Courageous.

1928 *Photo, Abrahams & Sons.*

Armour:
3″ Belt (amidships) ...
2″ Belt (forward) ....
2″ (H.T.) Fore bulkhead
3″—1″ (H.T.) After Bulkhead .....
1½″ Side over belt.....
1″ Upper deck.....
1¼″ Lower (stern, flat)
3″ Lower (stern, over rudder) .....
2″ Lower (on slopes) ..
Torpedo protection (H.T.):
Modified bulges 25 ft. deep .....
½″ Inner screen to boiler and engine room vents.

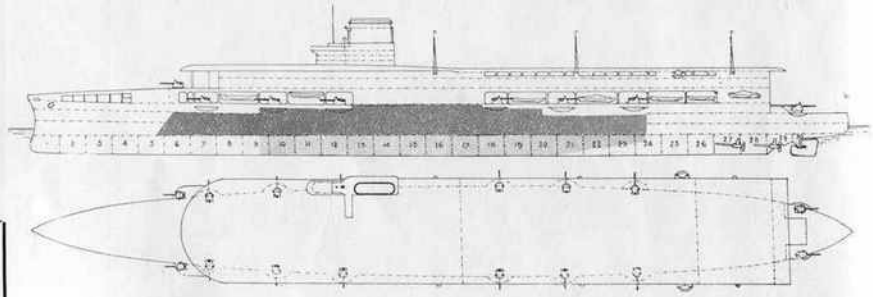
Machinery: Parsons (all-geared) turbines. 4 screws. Boilers: 18 Yarrow (small tube). Designed H.P. 90,000 = *about* 31 kts. Fuel (oil only): *normal*, 750 tons; *maximum*, 3250 tons.

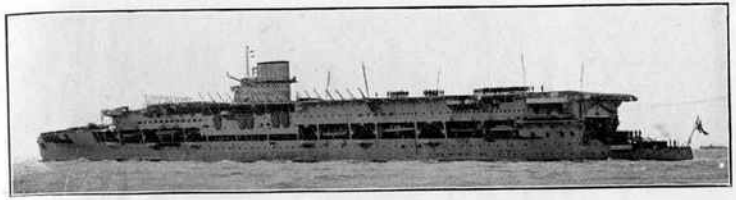
Armour Notes.—General scheme of armouring on Cruiser lines, the 3″ belt being built up of 2″ plating on 1″ shell plating. Decks round magazines thickened during completion.

Engineering Notes.—General arrangement of machinery as in Cruiser *Champion*. 4-shaft geared turbines and double helical gearing. Have done 32 kts. in service.

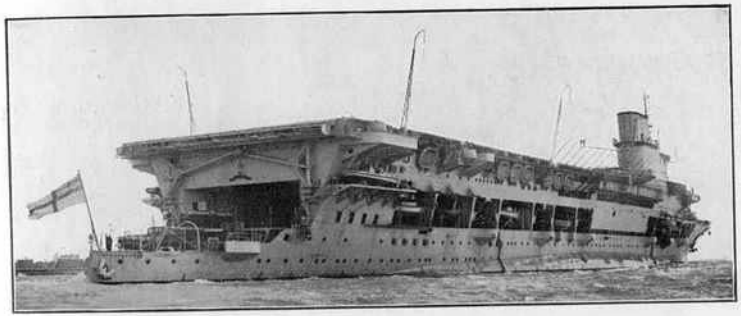
General Notes.—Emergency War Programme ships. Original cruiser design formulated by Lord Fisher in 1915, with a view to Baltic operations—hence the shallow draught. The lines are remarkably fine. On trials, *Courageous* met heavy weather and was driven into a head sea, straining her hull forward. Doubling plates were added here, and subsequent trials showed the defect had been overcome. *Glorious* strengthened in the same way a year later as a precautionary measure. No figures are available as to cost, but they are said to have run to three millions apiece. *Furious*, of slightly modified design, was converted while building into an Aircraft Carrier. *Courageous* and *Glorious* taken in hand for similar conversion at Devonport (June, 1924 and Feb., 1924 respectively). Work on *Glorious* was started at Rosyth, but on that yard being closed she was towed to Devonport for completion. *Courageous* completed March, 1928, her conversion having cost £2,025,800. *Glorious* completed January, 1930.

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials*
Courageous	Armstrong	Parsons	May, 1915	Jan., 1917	93,780 = 31·58
Glorious	Harland & Wolff, Belfast	Harland & Wolff	Mar., 1915	Jan., 1917	91,165 = 31·6

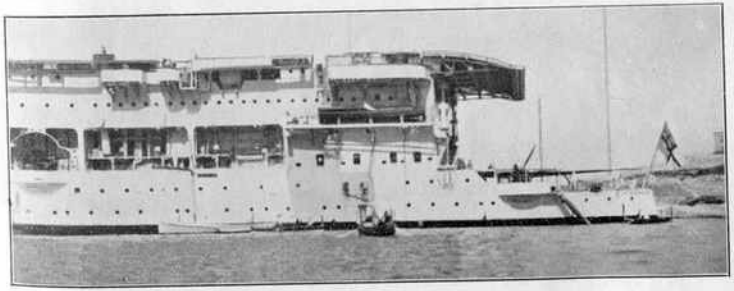




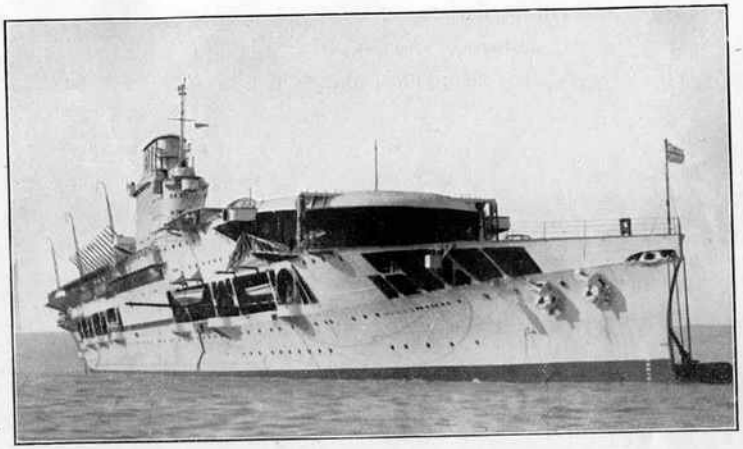
COURAGEOUS. 1928 *Photo, Cribb.*



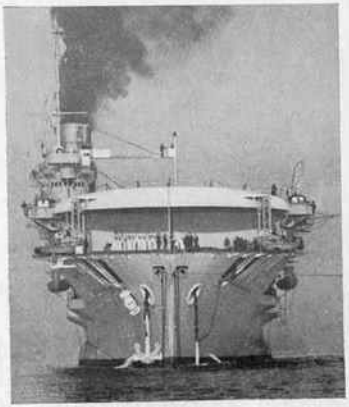
COURAGEOUS. 1928 *Photo, Cribb.*



Shewing extension of flight deck aft. 1929 *Photo, N. J. Tancye, Esq.*



COURAGEOUS. 1928 *Photo, R. Perkins, Esq.*



GLORIOUS. 1930 *Photo, Abrahams, Devonport.*

1930 *Photo, R. Perkins, Esq.*

1928 CRUISER.

EXETER (July 18th, 1929).

"Standard" displacement, 8390 tons.

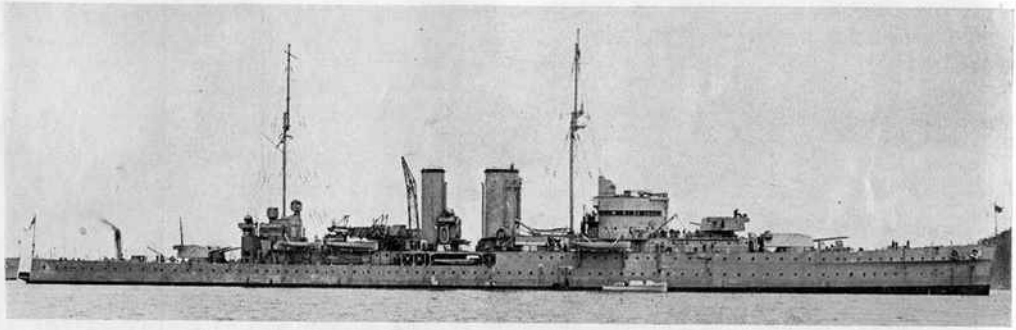
Length, 540 (*p.p.*), 575 (*o.a.*) feet. Beam, 58 feet. Draught, 17 feet.

Guns:
- 6—8″ 50 cal.
- 4—4″ AA.
- 4—3 pdr.
- 14 smaller.

Torpedo Tubes:
- 6—21″ (tripled)

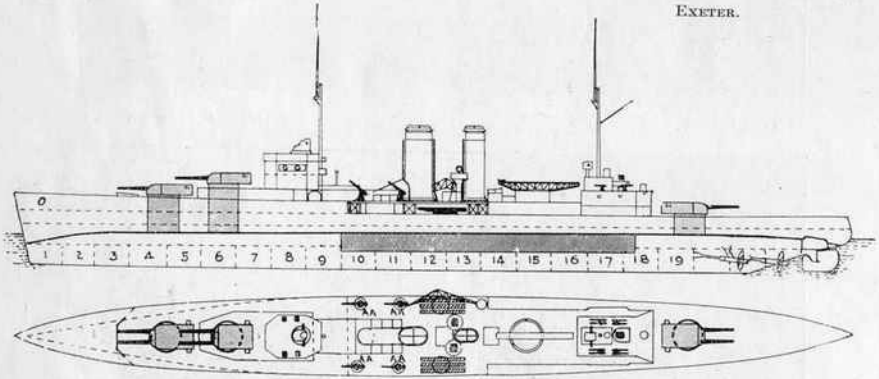
Aircraft:
- 2—Osprey or Fairey III F.

Armour:
- 2″ Deck
- 3″ C.T.



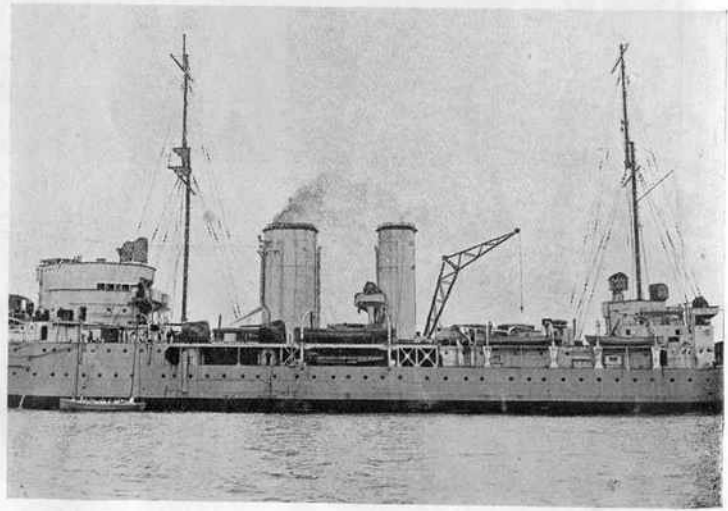
EXETER.

1933 *Photo, R. Perkins, Esq.*



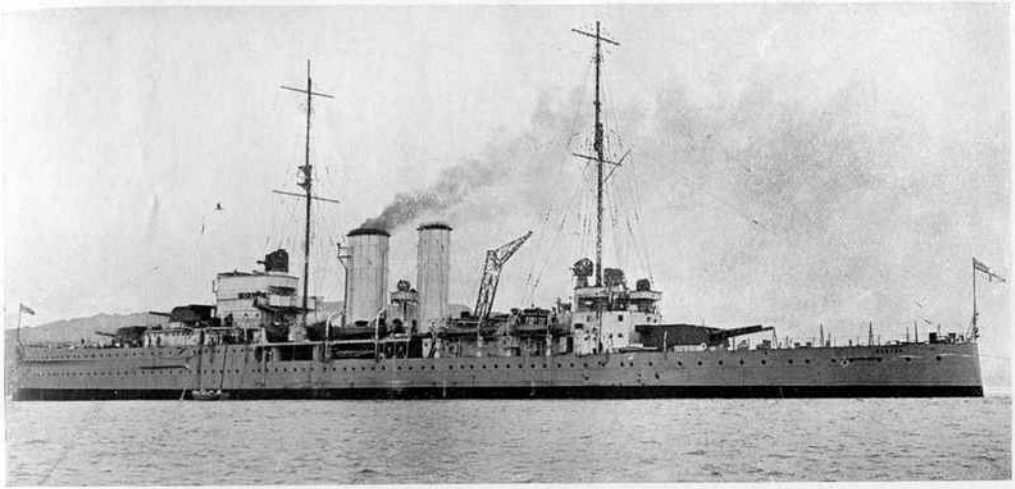
Machinery: Parsons geared turbines. 4 screws. Designed H.P. 80,000=32·25 kts. Oil fuel: 1900 tons. Radius, 10,000 miles at 11–14 kts. Boilers: Yarrow.

General Notes.—Designed by Sir William Berry and laid down at Devonport in August, 1928. Completed at the end of 1930. Design is similar to *York*, with an increase in beam of 1 foot. Originally she had three raking funnels and catapult on raised turret, with masts spaced as in *York*, but the foremost funnel was trunked into the second in order to improve the habitability of the bridge and save space and weight. The catapult on the second turret having been dispensed with, the bridge has been lowered so that the director is only 60 feet above water. Note the absence of wings to the bridge and the searchlight arrangement similar to that in the *Nelson* class. The absence of rake to the masts and funnels, which brings the main mast up through the superstructure, is a break-away from traditional cruiser practice and (like the thickening of the second funnel by 4 feet) has been effected in order to improve her appearance.

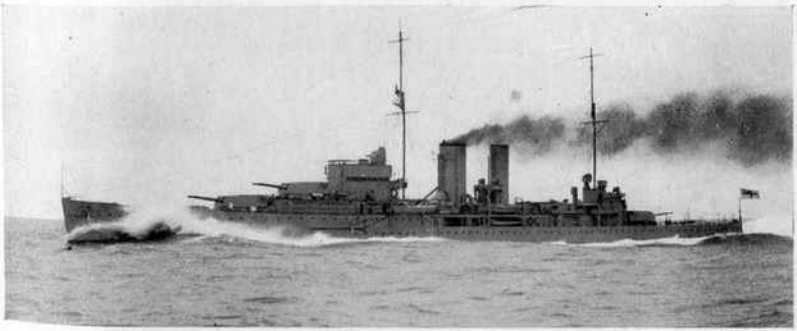


(*Forecastle plating now extends to second A.A. guns*).

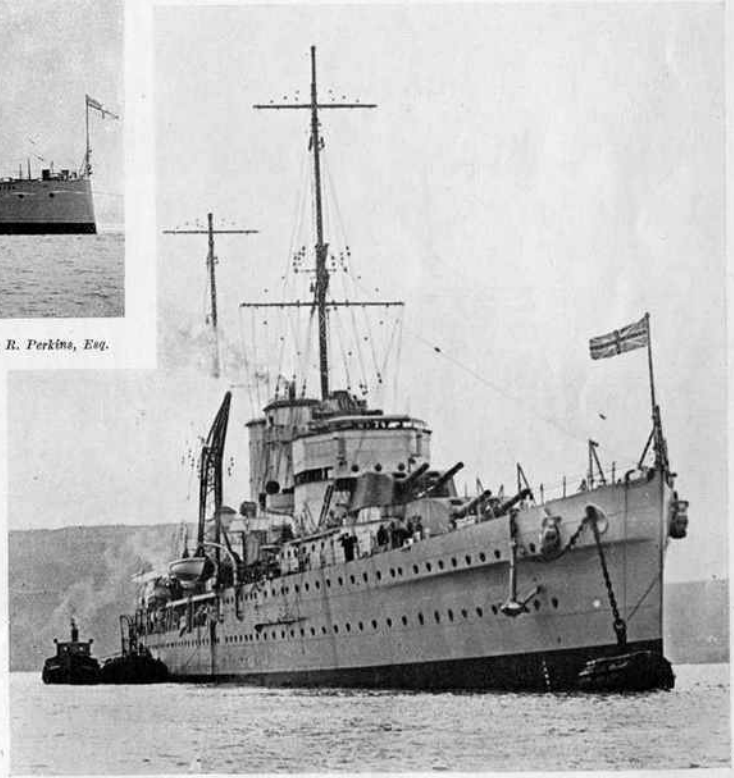
1931 *Photo, R. Perkins, Esq.*



1931 *Photo, R. Perkins, Esq.*



1931 *Photo, Cribb.*



1931 *Photo, R. Perkins, Esq.*

YORK (July 17th, 1928).

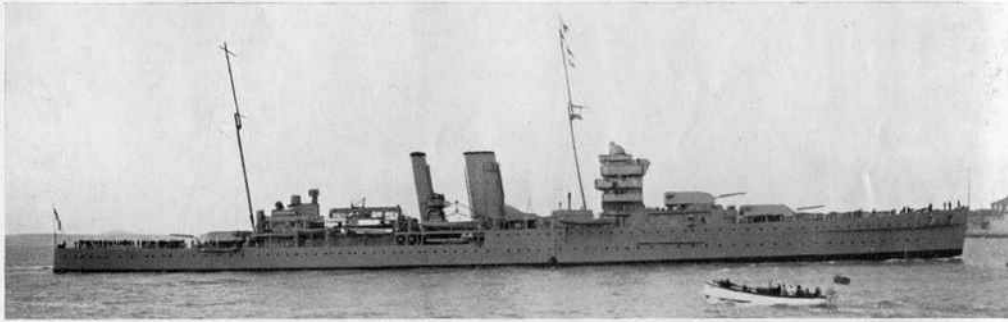
"Standard" displacement, 8250 tons.

Length, 540 (*p.p.*), 575 (*o.a.*) feet. Beam, 57 feet.

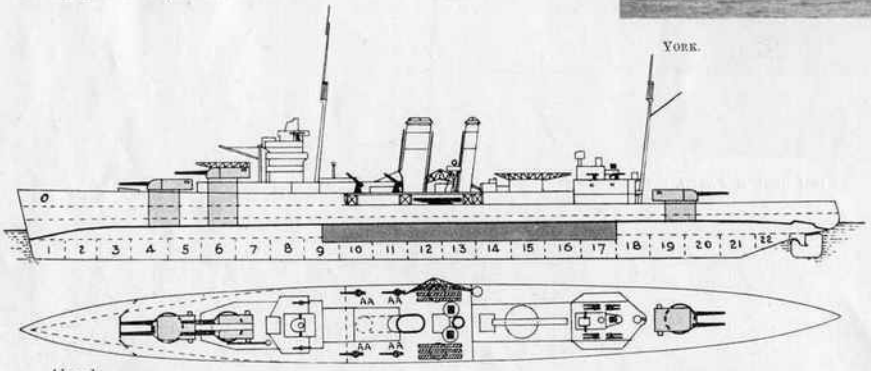
Draught, 17 feet.

Guns:
6—8 inch, 50 cal.
4—4 inch AA.
4—3 pdr.
14 smaller.
Torpedo Tubes:
6—21 inch (tripled)
Aircraft:
1—Osprey or Fairey III F.

Armour:
2″ Deck
3″ C.T.



YORK. 1933 *Photo, Cribb.*



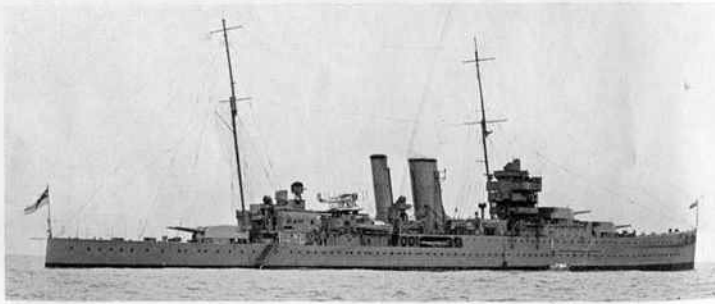
Ahead:
4—8 in.

Broadside **6**—8 in.

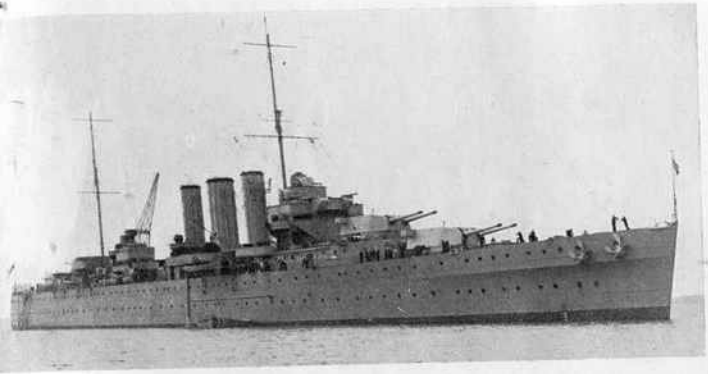
Astern:
2—8 in.

Machinery: Parsons geared turbines. 4 screws. Designed H.P. 80,000=32·25 kts. Oil fuel: 1900 tons. Radius, 10,000 miles at 11—14 kts. Boilers: Yarrow.

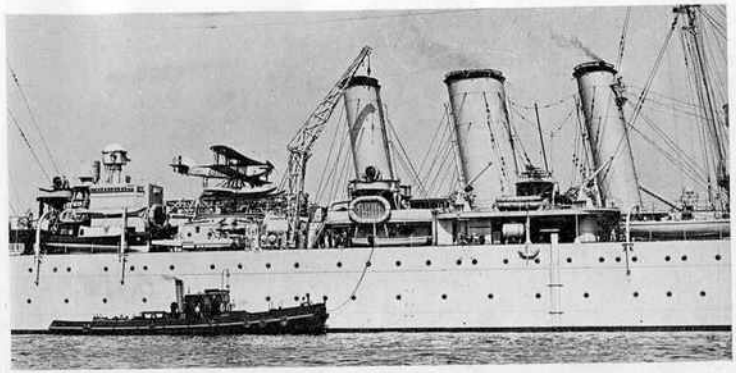
General Notes.—Designed by Sir William Berry and marks the first attempt on the part of one of the Treaty Powers to break away from the 10,000 ton type of cruiser. For a saving of 1600 tons, two 8″ guns are sacrificed, speed and protection being the same as in the *Kent* class, the resulting ship being little inferior to the 10,000 tonners, all things being considered. *York* was laid down at Messrs. Palmer's yard at Jarrow in May, 1927, and completed in June, 1930. The original design allowed for three funnels, but during 1928 the plans were modified and the foremost funnel was trunked into the second. In order to clear the catapult shown in the plan on the second turret, the bridge was raised, and consequently the funnels. It has been found, however, that the turrets are too light for the catapult to be carried, and it and the derrick have been dispensed with. The reversion to the triple torpedo tubes is due to limitation of training space only.



YORK. 1933 *Photo, R. Perkins, Esq.*



NORFOLK. 1929 *Photo, Cribb.*



DORSETSHIRE. 1933 *Photo, R. Perkins, Esq.*

DORSETSHIRE CLASS.

DORSETSHIRE (January 29th, 1929). Portsmouth Dockyard.
NORFOLK (December 12th, 1928). Fairfield.

Displacement, 9,900 tons.

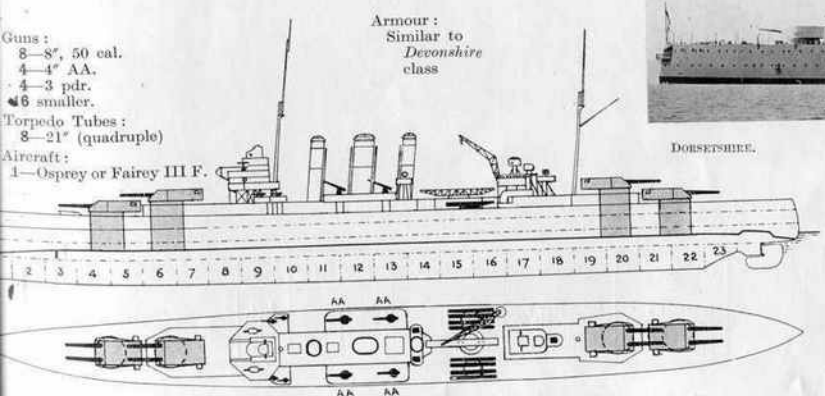
Length, 590 (*p.p.*), 630 (*o.a.*) feet. Beam, 66 feet. Draught, 17 feet.

Guns:
8—8″, 50 cal.
4—4″ AA.
4—3 pdr.
6 smaller.

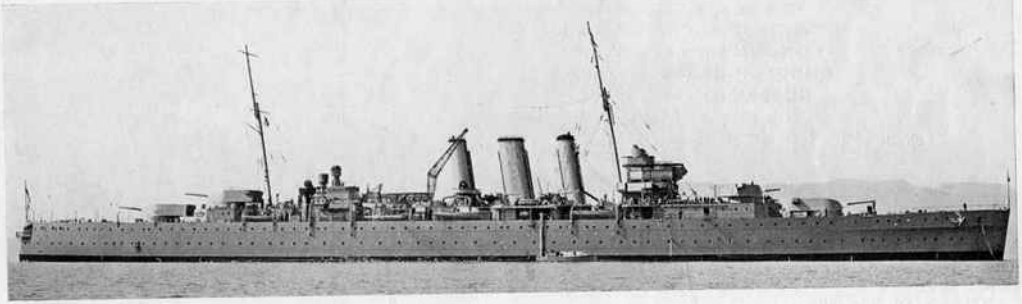
Torpedo Tubes:
8—21″ (quadruple)

Aircraft:
1—Osprey or Fairey III F.

Armour:
Similar to *Devonshire* class



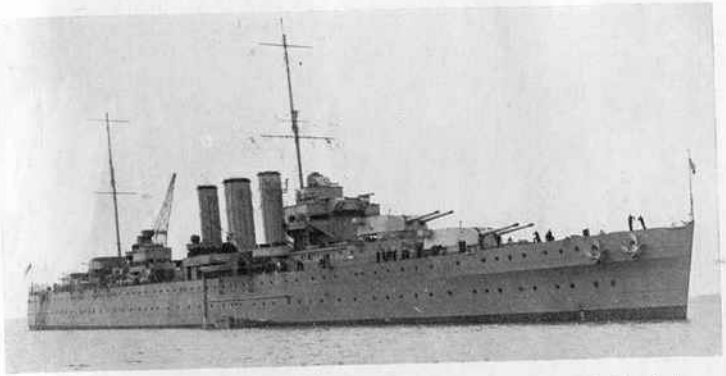
Ahead: 4—8″ Broadside: 8—8″ Astern: 4—8″



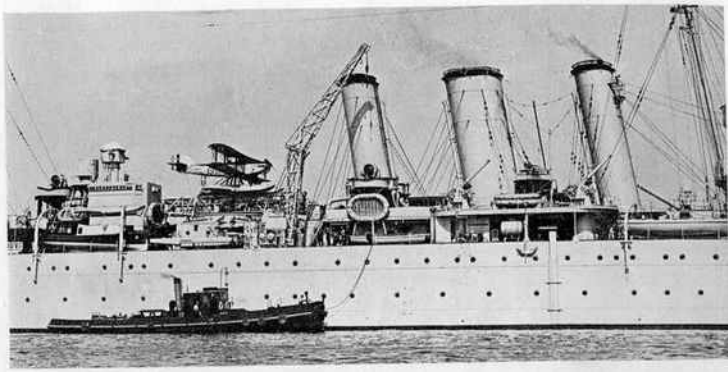
DORSETSHIRE. 1933 *Photo, R. Perkins, Esq.*

Machinery: Geared turbines. 4 screws. Designed S.H.P. 80,000=32·25 kts. Oil fuel: 3200 tons. Boilers: Yarrow. Machinery of *Dorsetshire* by Cammell Laird, *Norfolk* by Fairfield.

General Notes.—Designed by Sir William Berry and built under the 1926-27 Estimates. *Dorsetshire* begun September, 1927, and completed July, 1930; *Norfolk* in July, 1927, and completed in June, 1930. Differ from the *London* class in position of AA. guns, height of bridge (the topmost deck has been removed) and dimensions. Crane mounted on starboard side and can be stowed below searchlights on third funnel. Two Quadruple AA. mounts forward of second funnel.



NORFOLK. 1930 *Photo, Cribb.*



DORSETSHIRE. 1933 *Photo, R. Perkins, Esq.*

DORSETSHIRE CLASS.

DORSETSHIRE (January 29th, 1929). Portsmouth Dockyard.
NORFOLK (December 12th, 1928). Fairfield.

Displacement, 9,900 tons.

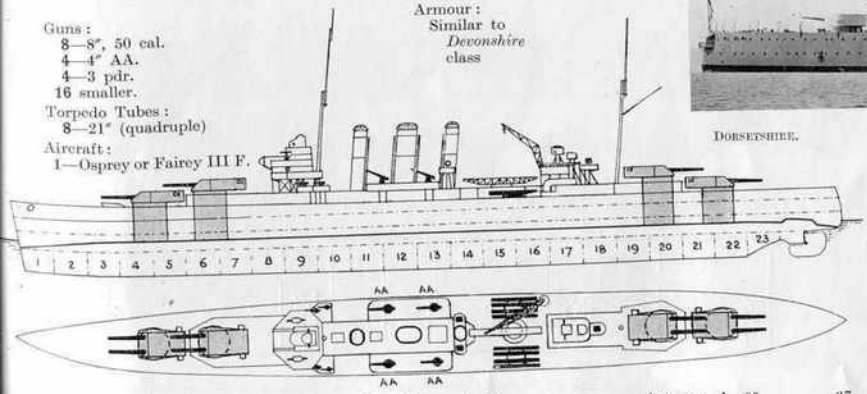
Length, 590 (*p.p.*), 630 (*o.a.*) feet. Beam, 66 feet. Draught, 17 feet.

Guns:
8—8″, 50 cal.
4—4″ AA.
4—3 pdr.
16 smaller.

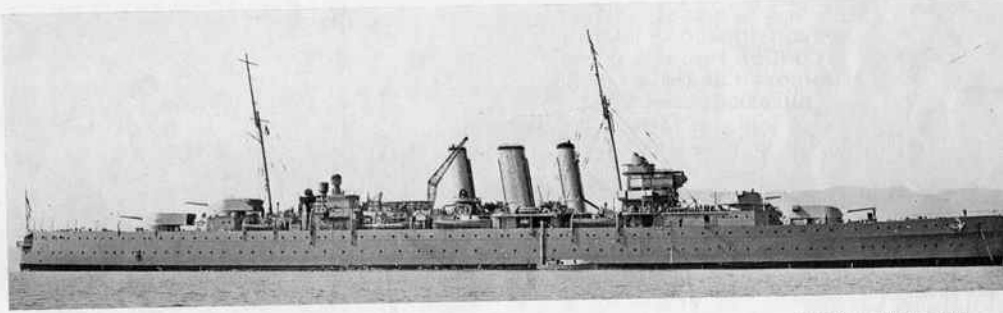
Torpedo Tubes:
8—21″ (quadruple)

Aircraft:
1—Osprey or Fairey III F.

Armour:
Similar to *Devonshire* class



Ahead: 4—8″ Broadside: 8—8″ Astern: 4—8″

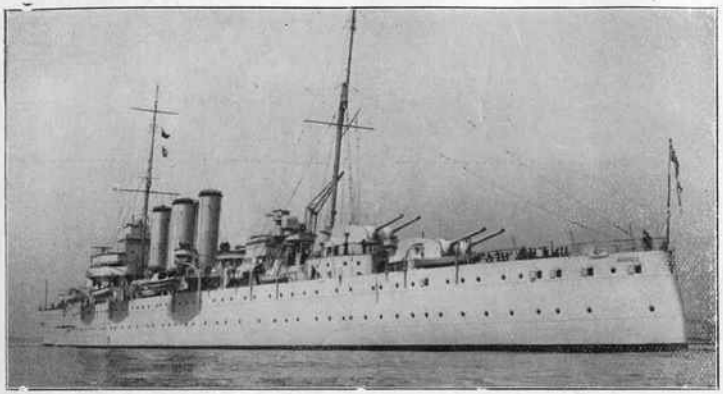


DORSETSHIRE. 1933 *Photo, R. Perkins, Esq.*

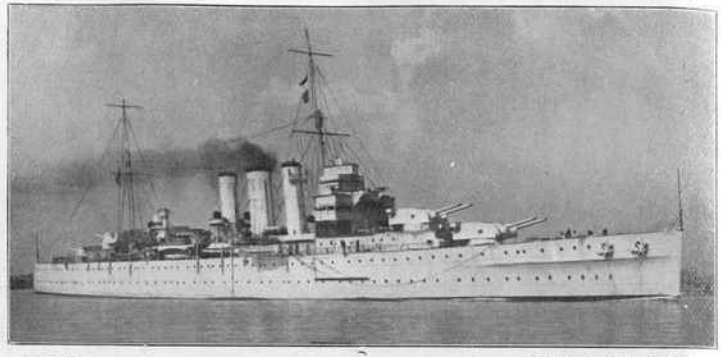
Machinery: Geared turbines. 4 screws. Designed S.H.P. 80,000=32·25 kts. Oil fuel: 3200 tons. Boilers: Yarrow. Machinery of *Dorsetshire* by Cammell Laird, *Norfolk* by Fairfield.

General Notes.—Designed by Sir William Berry and built under the 1926-27 Estimates. *Dorsetshire* begun September, 1927, and completed July, 1930; *Norfolk* in July, 1927, and completed in June, 1930. Differ from the *London* class in position of AA. guns, height of bridge (the topmost deck has been removed) and dimensions. Crane mounted on starboard side and can be stowed below searchlights on third funnel. Two Quadruple AA. mounts forward of second funnel.

1925 CRUISERS.



SUSSEX. 1929 *Photo, Cribb, Southsea.*



LONDON. 1929 *Photo, Cribb, Southsea.*

(LONDON CLASS—4 SHIPS.)

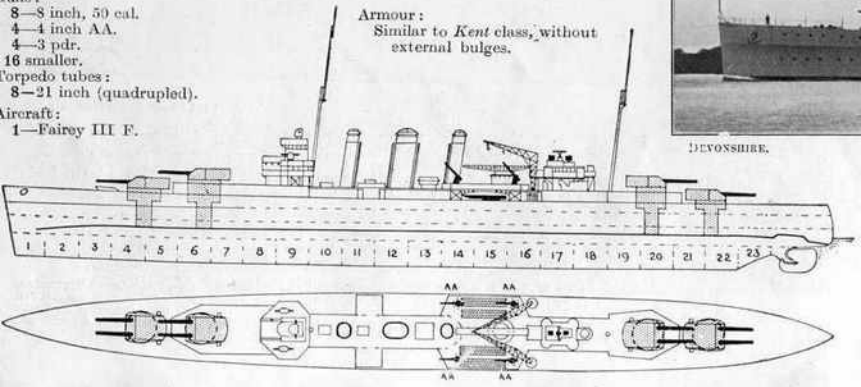
DEVONSHIRE (Oct. 22nd, 1927).
LONDON (Sept. 14th, 1927).
SHROPSHIRE (July 5th, 1928).
SUSSEX (Feb. 22nd, 1928).

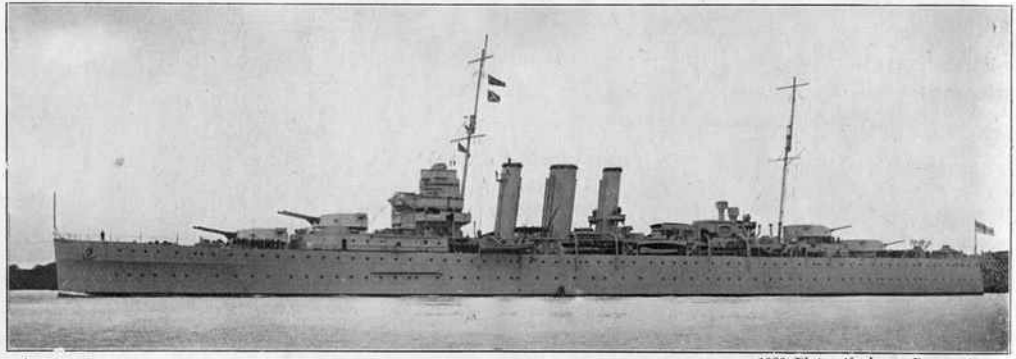
Displacement, 9,750 tons

Length { *p.p.* 595 feet / *o.a.* 633 feet } Beam, 66 feet. Draught, 17 feet.

Guns:
8—8 inch, 50 cal.
4—4 inch AA.
4—3 pdr.
16 smaller.
Torpedo tubes:
8—21 inch (quadrupled).
Aircraft:
1—Fairey III F.

Armour:
Similar to *Kent* class, without external bulges.



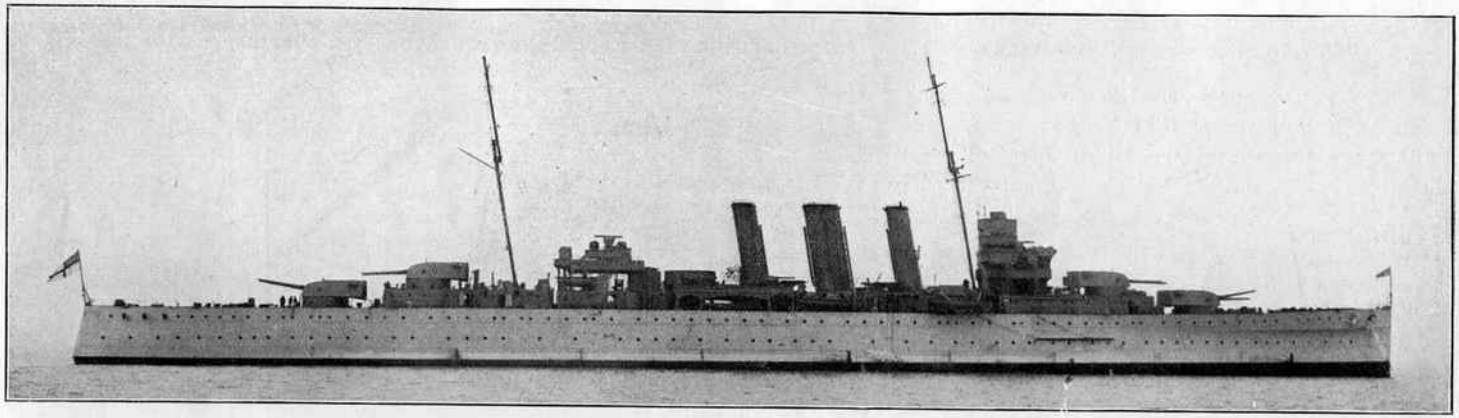


DEVONSHIRE. 1929 *Photo, Abrahams, Devonport.*

Machinery: Geared turbines. 4 screws. Designed S.H.P. 80,000 = 32·25 kts. Oil fuel: 3200 tons.

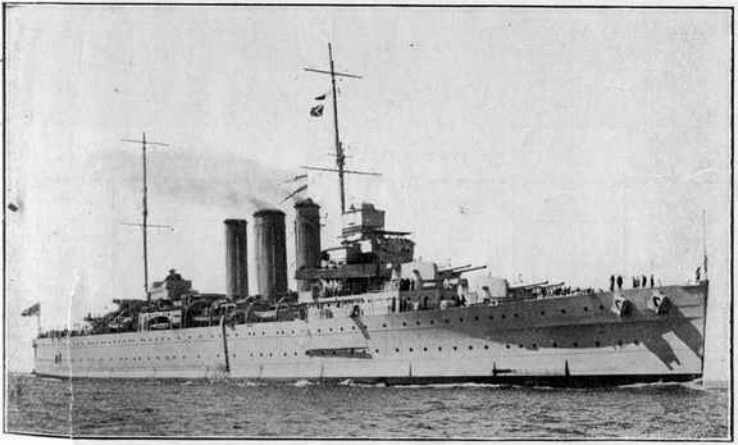
Name	*Builder*	*Machinery*	*Ordered*	*Begun*	*Completed*	*Trials*	*Boilers*
Devonshire	Devonport Y.	Vickers	1925	16/3/26	3/29		Yarrow in all
London	Portsmouth Y.	Fairfield	-26	23/2/26	1/29		
Shropshire	Beardmore	Beardmore		2/26	9/29		
Sussex	Hawthorn, Les.	Hawthorn		1926	3/29		

General Notes.—All designed by Sir William J. Berry. *London* class authorised by 1925-26 Estimates. Aeroplane derrick on Starboard side only.

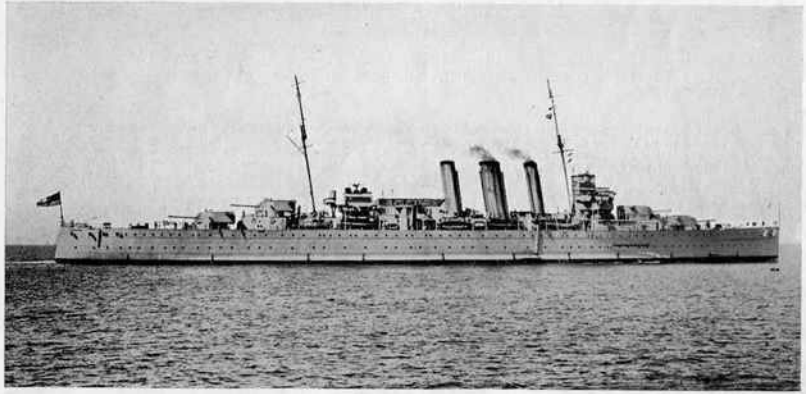


KENT.

1928 *Photo, Stephen Cribb, Southsea.*



1928 *Photo, Cribb.*



1933 *Photo.*

1924 CRUISERS.

(KENT CLASS—5 SHIPS.)

BERWICK (March 30th, 1926), **CORNWALL** (March 11th, 1926), **CUMBERLAND** (March 16th, 1926), **KENT** (March 16th, 1926), **SUFFOLK** (Feb. 16th, 1926)

Displacement, 9750/9850 tons

Complement, 679 (710 as flagship).

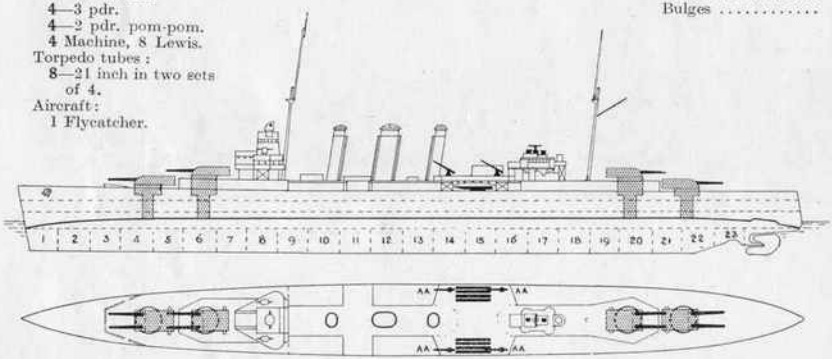
Length (*p.p.*) 590 feet, (*o.a.*) 630 feet. Beam, 68¾ feet. Draught, 16½ feet (*mean*).

Guns :
8—8 inch, 50 cal.
4—4 inch AA.
4—3 pdr.
4—2 pdr. pom-pom.
4 Machine, 8 Lewis.

Torpedo tubes :
8—21 inch in two sets of 4.

Aircraft :
1 Flycatcher.

Armour :
3—1½″ Deck over vitals
3″ C.T. .....
Bulges .....



Machinery : Geared turbines. 4 screws. Designed S.H.P. 80,000 = 31·5 kts. Boilers : 8 Yarrow in all. Oil fuel : 3400 tons. Radius at full speed, 2300 miles ; at economical speed (11—14 kts.), 10,400 miles.

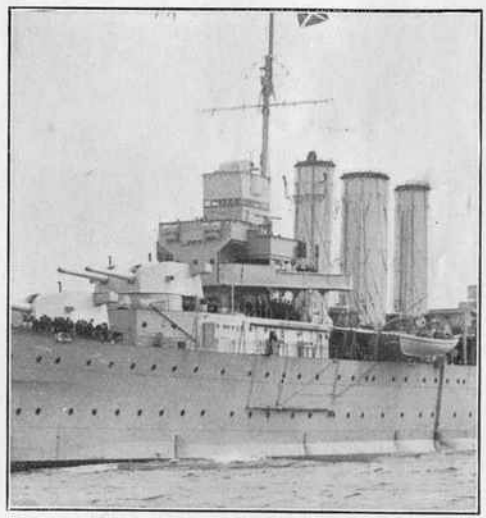
General Notes.—Built under 1924–25 Estimates ; designed by Sir Eustace Tennyson d'Eyncourt. Although on paper these ships appear to be inferior to foreign Treaty cruisers, they are in practice, superior in sea-going qualities and have accommodation and habitability which is not equalled by any other cruisers. In addition, a considerable amount of weight has been expended in structural strength and internal protection. No attempt has been made to attain the high speeds which have been recorded by the *Tourville* and *Trento* types, the ideal aimed at being the ability to sustain the designed speed indefinitely and in all weathers, without exceeding the normal S.H.P. and over 34 knots has been maintained in service without in any way pressing the boilers. A catapult is fitted amidships, one Seaplane carried. Two ships of the class *Australia* and *Canberra* have been built for the Australian Navy. Average cost is £1,970,000 and annual upkeep £238,850 per ship.

Gunnery Notes.—Exceptional elevation has been given to the 8″ guns, more than 65° having been observed. By means of an improved ammunition supply a rate of fire of four rounds per gun per minute can be maintained under D.C. Weight of 8″ broadside 2,048 lbs. Total cost of armament £700,000 ; of firing a single broadside £408.

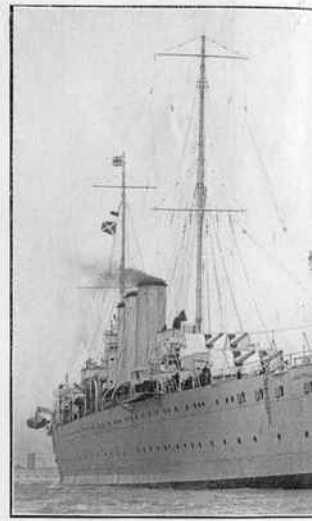
Armour Notes.—No side armour is included in the design, protection being afforded by a 3″—1½″ deck. External bulges are fitted and the internal subdivision is particularly well planned.

Torpedo Notes.—These ships carry the first quadruple tubes to be fitted in any navy, and despite their height above water are satisfactory in every way.

Engineering Notes.—Boiler pressure is 250 lbs.



1928 *Photo, Cribb.*



1928 *P*

Name	*Builder*	*Machinery*	*Ordered*	*Begun*	*Completed*	*Trials*	*Turbines*
Berwick	Fairfield	Fairfield	1924	11/24	8/27	=32·5	Brown-Curtis
Cornwall	Devonport Y.	Beardmore		9/10/24	11/27		Parsons
Cumberland	Vickers	Vickers		10/24	10/27		Parsons
Kent	Chatham Y.	Hawthorn		15/11/24	2/28		Parsons
Suffolk	Portsmouth Y.	Parsons		30/9/24	1/28		Parsons

1924 CRUISERS.

(KENT CLASS—5 SHIPS.)

BERWICK (March 30th, 1926), **CORNWALL** (March 11th, 1926), **CUMBERLAND** (March 16th, 1926), **KENT** (March 16th, 1926), **SUFFOLK** (Feb. 16th, 1926)

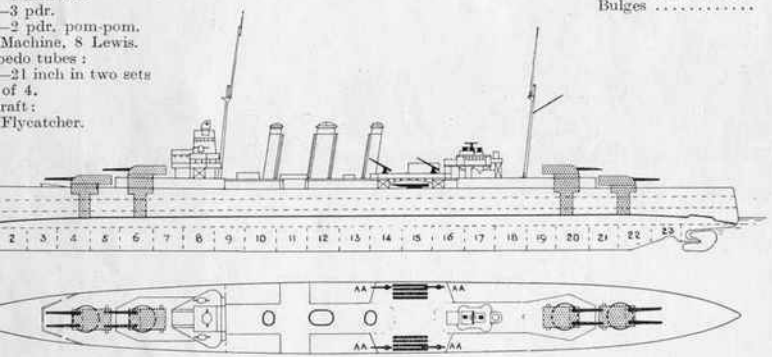
Displacement, 9750/9850 tons

Complement, 679 (710 as flagship).

Length (*p.p.*) 590 feet, (*o.a.*) 630 feet. Beam, 68¼ feet. Draught, 16½ feet (*mean*).

Armour :
3—1½" Deck over vitals
3" C.T. .....
Bulges .....

a :
–8 inch, 50 cal.
–4 inch AA.
–3 pdr.
–2 pdr. pom-pom.
Machine, 8 Lewis.
pedo tubes :
–21 inch in two sets
of 4.
raft :
Flycatcher.



Machinery : Geared turbines. 4 screws. Designed S.H.P. 80,000 = 31·5 kts. Boilers : 8 Yarrow in all. Oil fuel : 3400 tons. Radius at full speed, 2300 miles ; at economical speed (11—14 kts.), 10,400 miles.

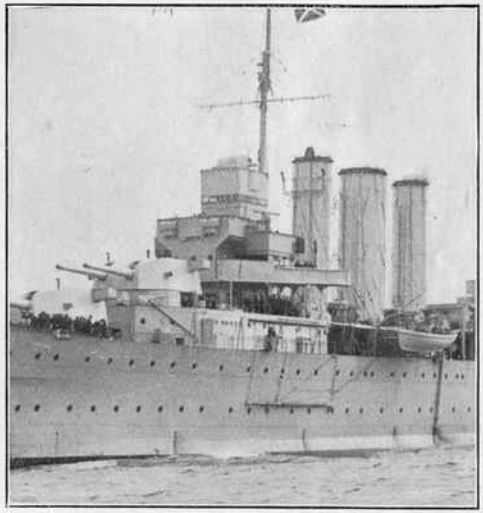
General Notes.—Built under 1924–25 Estimates ; designed by Sir Eustace Tennyson d'Eyncourt. Although on paper these ships appear to be inferior to foreign Treaty cruisers, they are in practice, superior in sea-going qualities and have accommodation and habitability which is not equalled by any other cruisers. In addition, a considerable amount of weight has been expended in structural strength and internal protection. No attempt has been made to attain the high speeds which have been recorded by the *Tourville* and *Trento* types, the ideal aimed at being the ability to sustain the designed speed indefinitely and in all weathers, without exceeding the normal S.H.P. and over 34 knots has been maintained in service without in any way pressing the boilers. A catapult is fitted amidships, one Seaplane carried. Two ships of the class *Australia* and *Canberra* have been built for the Australian Navy. Average cost is £1,970,000 and annual upkeep £238,850 per ship.

Gunnery Notes.—Exceptional elevation has been given to the 8" guns, more than 65° having been observed. By means of an improved ammunition supply a rate of fire of four rounds per gun per minute can be maintained under D.C. Weight of 8" broadside 2,048 lbs. Total cost of armament £700,000 ; of firing a single broadside £408.

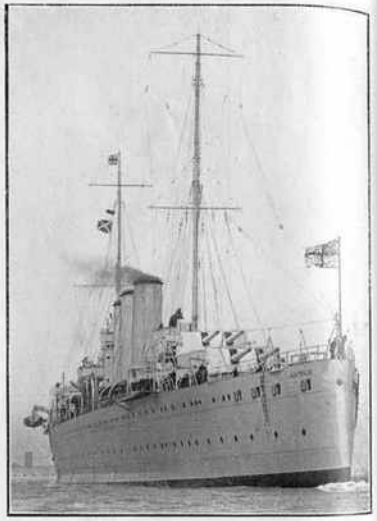
Armour Notes.—No side armour is included in the design, protection being afforded by a 3"—1½" deck. External bulges are fitted and the internal subdivision is particularly well planned.

Torpedo Notes.—These ships carry the first quadruple tubes to be fitted in any navy, and despite their height above water are satisfactory in every way.

Engineering Notes.—Boiler pressure is 250 lbs.



1928 *Photo, Cribb.*



1928 *Photo, Cribb.*

Name	*Builder*	*Machinery*	*Ordered*	*Begun*	*Completed*	*Trials*	*Turbines*
Berwick	Fairfield	Fairfield	1924	11/24	9/27	=32·5	Brown-Curtis
Cornwall	Devonport Y.	Beardmore		9/10/24	11/27		Parsons
Cumberland	Vickers	Vickers		10/24	10/27		Parsons
Kent	Chatham Y.	Hawthorn		15/11/24	2/28		Parsons
Suffolk	Portsmouth Y.	Parsons		30/9/24	1/28		Parsons

(Arethusa Class.—3 Ships).

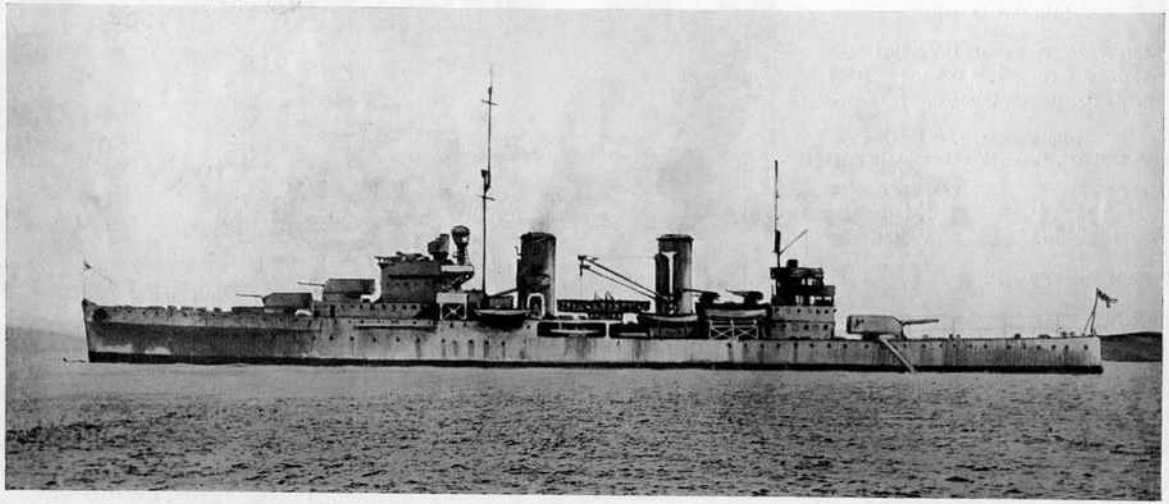
ARETHUSA (Chatham).
GALATEA (Scott's).

"C" projected.

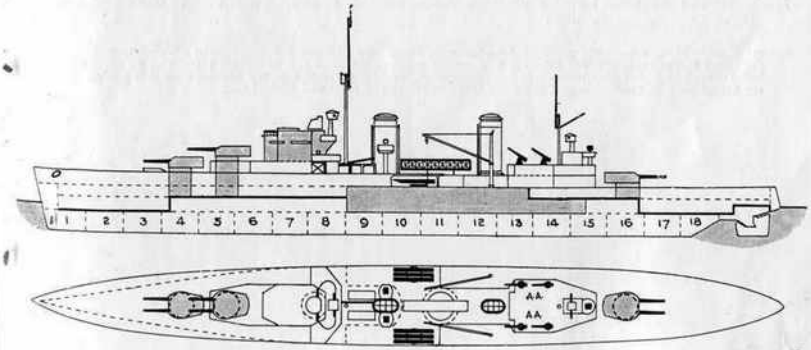
Displacement, 5,200 tons.
Length Beam Draught

Guns:
6—6 inch.
4—4 inch.
4—3 pdr.
18 smaller guns.

Torpedo Tubes:
6—21 inch in Triple mounts.



1933 *Drawing, Oscar Parkes.*



Machinery: Parsons geared Turbines. 4 screws. S.H.P. = knots. Oil: tons.

General Notes.—These ships may be said to bear the same relation to the *Leander* as the *York* class do to the *Kents*, and are likely to become the basis for a standard type of convoy cruiser. Their tonnage is the minimum for ocean-going efficiency and the armament adequate to deal with likely convoy-raiders, bearing in mind that being relatively inexpensive they can be produced in numbers. The illustrations are intended to indicate the general features only from such information as has been available. A reversion to two funnels is caused by the spacing of the boiler and engine rooms in two units, which obviates wholesale flooding of the boiler-rooms. The grouping of the AA. guns on the after superstructure instead of amidships should be noted, the multiple-mounts being on platforms below the bridge. Absence of wings to the bridge is likely to cramp accommodation and the height of the gun control positions seems inadequate. Excepting for the two lifeboats all the boats will be handled by the two derricks.

(Amphion Class).

AMPHION (Portsmouth D.Y.), 1931 Programme.
APOLLO (Devonport D.Y.), 1932 Programme.
PHAETON (Swan, Hunters), 1932 Programme.

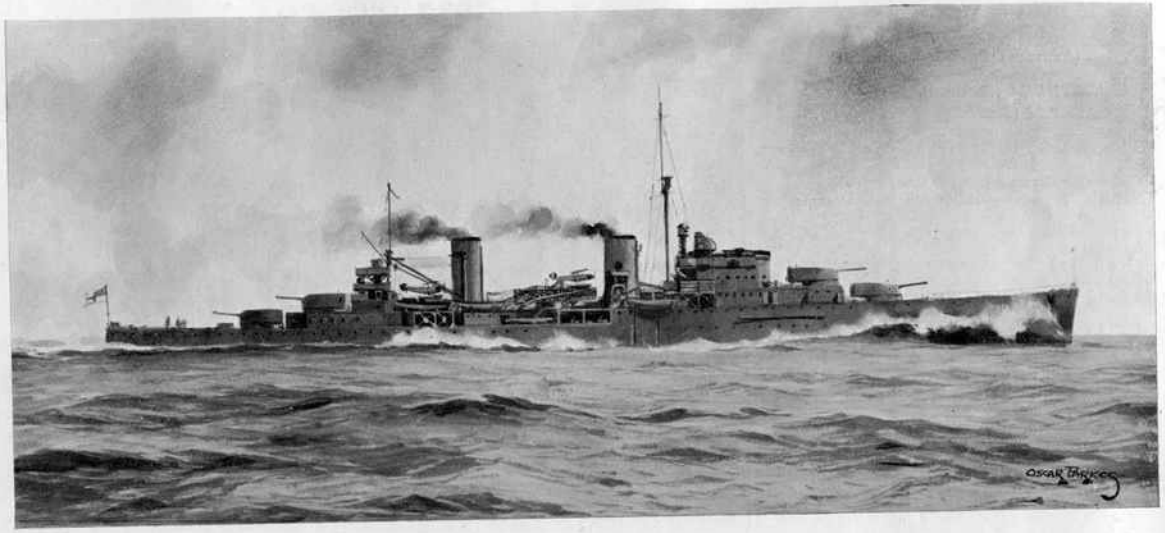
Displacement, 7,000 tons.
Length, 559½ feet. Beam, 55' 2" Draught (*mean*) 16 feet.

Guns: 8—6"
4—4" A.A.
4—3 pdrs.
18 smaller.

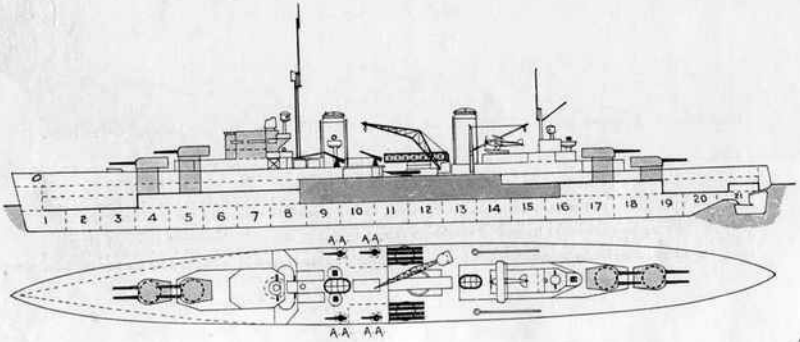
Armour:
1" turrets.
1" bridge.
2"—3" side.

Torpedo Tubes: 8—21".

Aircraft:
2.

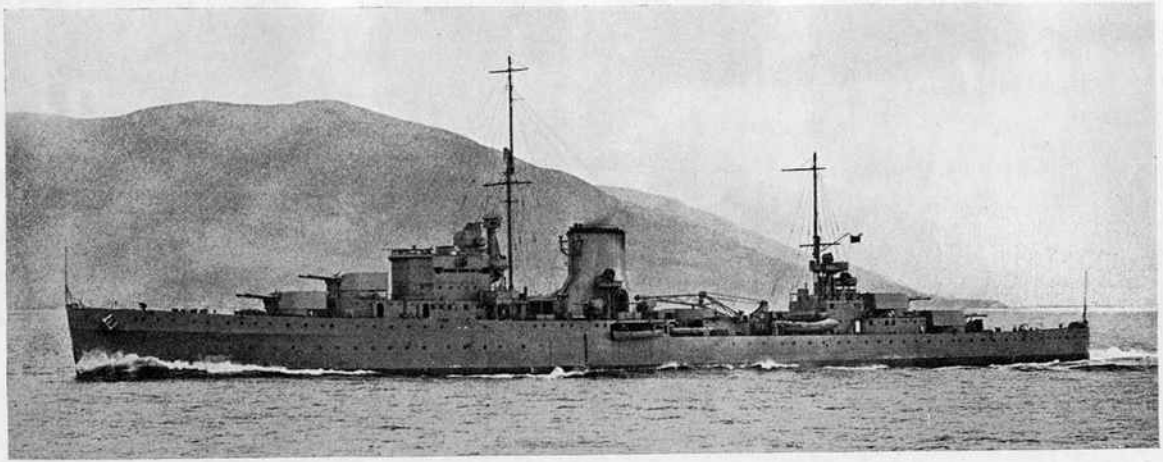


1933 *Drawing, Oscar Parkes.*

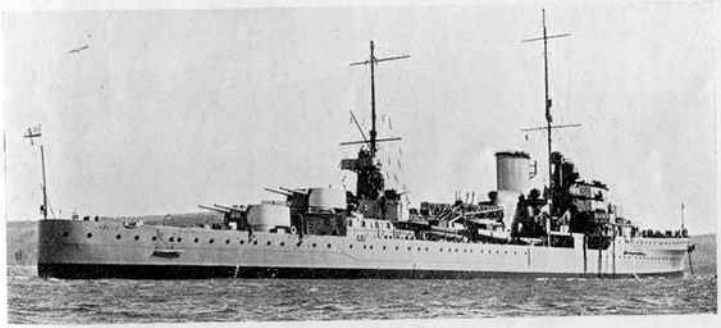


Machinery: 4 Parsons Impulse reaction Turbines. 4 screws. S.H.P. 72,000=32·5 kts.
Oil= tons. Boilers:

General Notes.—These vessels are modified *Leanders* with the engine and boiler rooms spaced alternately instead of the boiler rooms being grouped amidships. A prolongation of the after superstructure permits of an extra plane being stowed on top of additional cabin accommodation. From experience with the *Leander* class it is possible that the bridge may be modified and a reversion made to the tripod mast and control top.



ACHILLES. (*Note forecastle plating extends aft to A.A. guns*). 1933 *Photo favour of the Builders.*



LEANDER. 1933 *Photo, R. Perkins, Esq.*

LEANDER. 1933 *Photo, Cribb.*

(Leander Class—8 Ships.)

Est.
1929 **LEANDER** (Devonport. September 24, 1931).
1930 **NEPTUNE** (Portsmouth. 1932).
1930 **ORION** (Devonport. Nov. 24, 1932).
1930 **ACHILLES** (Cammell Laird. Sept. 1, 1932).
1931 **AJAX** (Vickers-Armstrong).

Displacement, 7,000 tons.

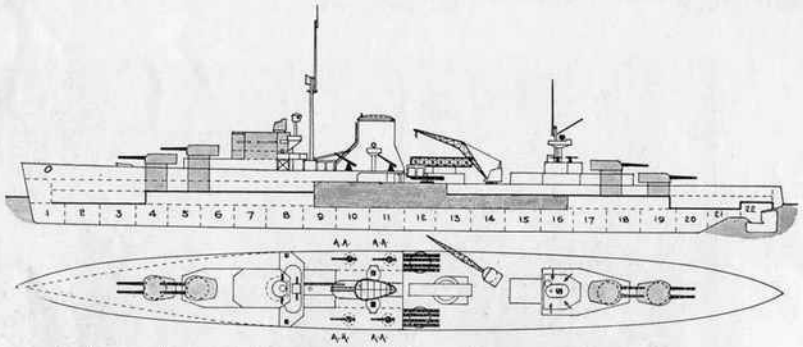
Length (*o.a.*) 554½ feet. Beam, 55′ 2″. Draught (*mean*) 16 feet.

Guns :
8—6″
4—4″ AA.
4—3 pdr.
18 Smaller Guns.

Armour :
—Deck
2″—3″ Side amidships.
1″ Turrets.
1″ Bridge.

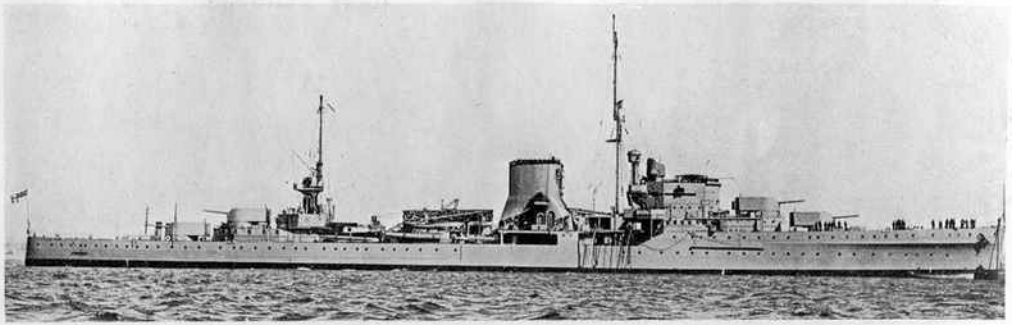
Torpedo Tubes :
8—21″ in Quadruple mounts.

Aircraft :
1—Osprey.

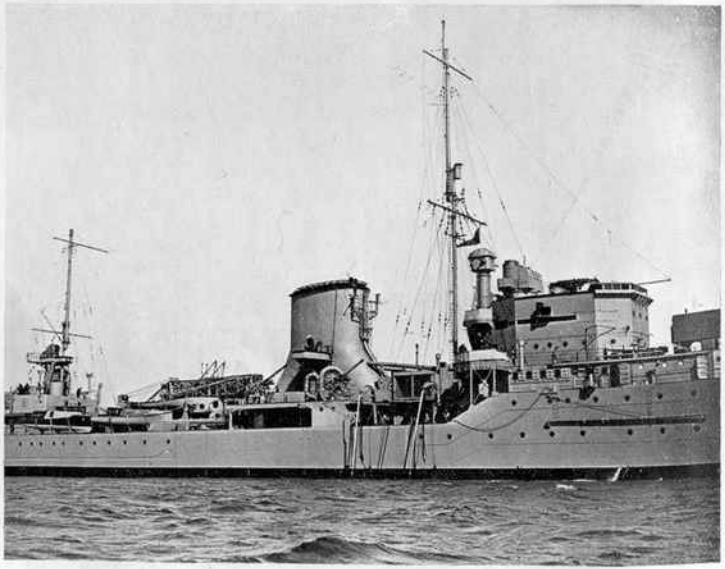


Machinery : Parsons Impluse reaction Turbines. 4 screws. Designed S.H.P. 72,000 = 32.5 kts. Oil fuel : tons. Radius, miles at kts. Boilers :

General Notes.—This class represents a return to sanity in cruiser design compared with the overgrown and overgunned 10,000 ton Treaty type. The eight guns in four turrets is a disposition of armament which is regarded by the gunnery branch as the best number and arrangement for satisfactory control, and superior in practice to nine guns in triple mountings as in the German *Köln* class. The 6 inch guns are of an entirely new model produced by the "auto-frettage" system instead of being wire wound. *Leander* was laid down under 1929 Estimates ; remainder under 1930, 1931 and 1932 Estimates.



Leander. 1933 *Photo, R. Perkins, Esq.*



Leander. 1933 *Photo, R. Perkins, Esq.*

("E" Class—First Ship.)

ENTERPRISE (23rd December, 1919).

Displacement, 7580 tons; Complement, 572/577.

Length { *p.p.* 535 feet / *o.a.* 570 feet } Beam 54½ feet. Draught { *mean* 16½ feet. / *max.* feet.

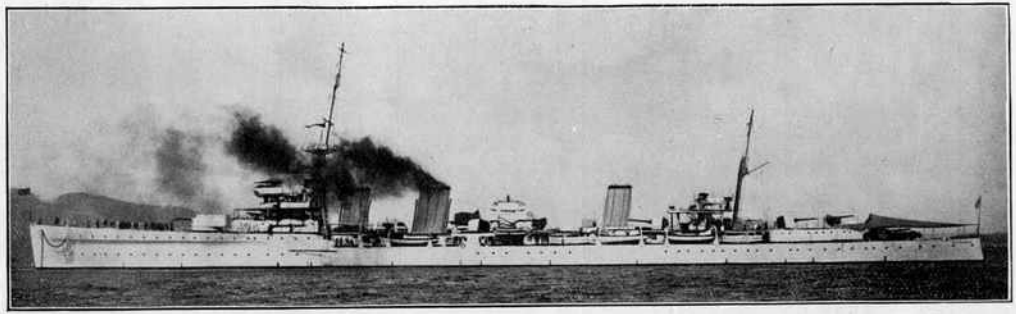
Guns:
7—6 inch, 50 cal. (**Dir. Con.**)
3—4 inch AA.
4—3 pdr.
2—2 pdr. pom-pom.
2 M.G.
8 Lewis.

Torpedo tubes (21 inch):
16, in four quadruple mountings, *above water*.

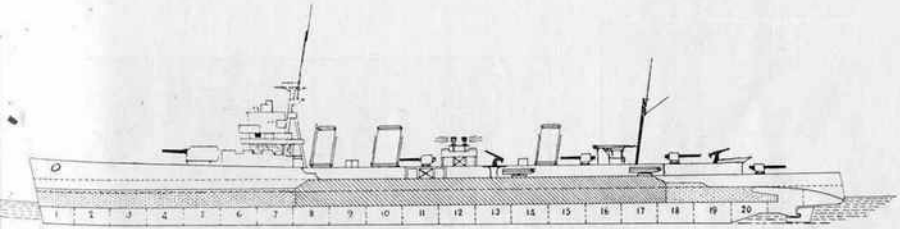
Armour (H.T.):
3″ Side (amidships) .....
2½″—1½″ Side (bow) .....
2″ Side (stern) .....
1″ Upper deck (amidships) ..
1″ Deck (over rudder) .....
″ Turret.....

Aircraft:
1—Flycatcher.

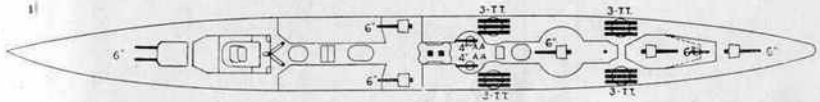
Machinery: Turbines, 4 sets Brown-Curtis (geared). 4 screws. Designed S.H.P. 80,000 = 33 kts. (light), 32 kts. (*full load*). Boilers: 8 Yarrow small tube. Fuel (oil only): *normal*, 650 tons; *maximum*, 1600 tons.



ENTERPRISE. 1926 *Photo, Abrahams & Sons, Devonport.*



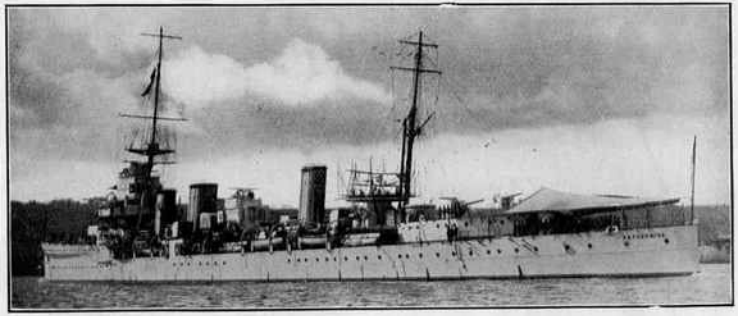
Note to plan: Torpedo Tubes now quadrupled.



Ahead: 3 to **4**—6 inch.

Broadside: **6**—6 inch, **8**—21 inch T.T

Astern: **3** to **4**—6 inch.

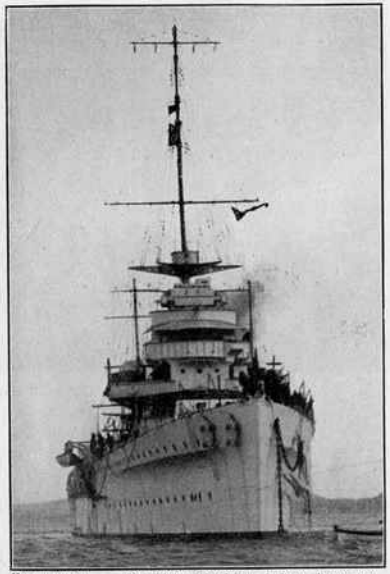


ENTERPRISE. 1926 *Photo, Abrahams & Sons, Devonport.*

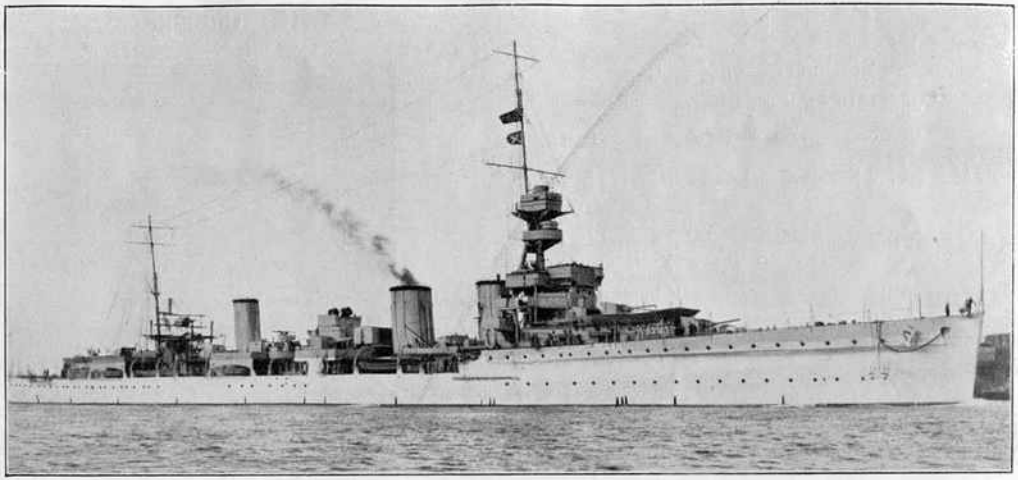
General Notes.—It will be observed that the bridge is of a novel type, which has attained fuller development in the *Kent* class. This and the twin turret forward render it easy to distinguish this ship from *Emerald*.

Gunnery Notes.—Pairing of forward 6 inch guns adopted as an experiment in this ship, has been followed closely in the *Nelson* and *Rodney*.

(Additional notes will be found on a later page, under sister ship *Emerald*.)

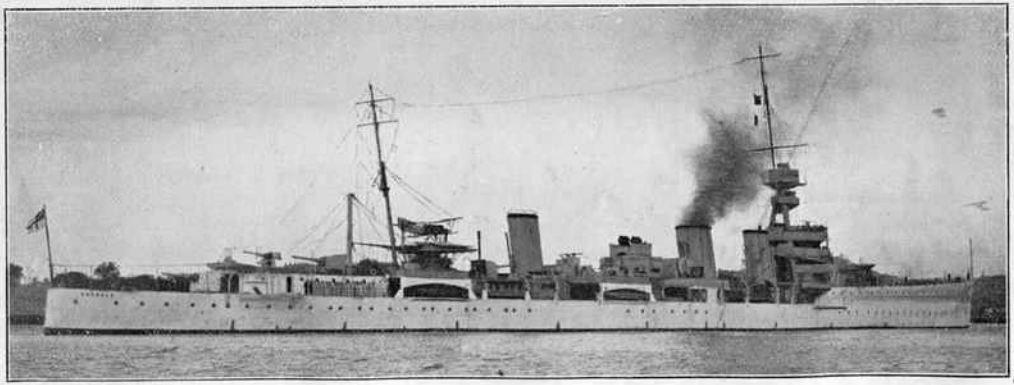


ENTERPRISE. 1926 *Photo, Abrahams & Sons, Devonport.*

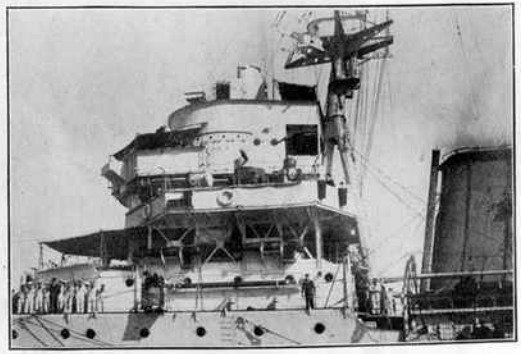


EMERALD. 1929 *Photo, Abrahams, Devonport.*

ADDITIONAL VIEWS OF "E" CLASS



EMERALD. 1929 *Photo, Abrahams, Devonport.*



Details of bridgework, ENTERPRISE. 1926 *Photo, Abrahams & Sons, Devonport.*

("E" Class—Second Ship).

EMERALD (19th May, 1920).

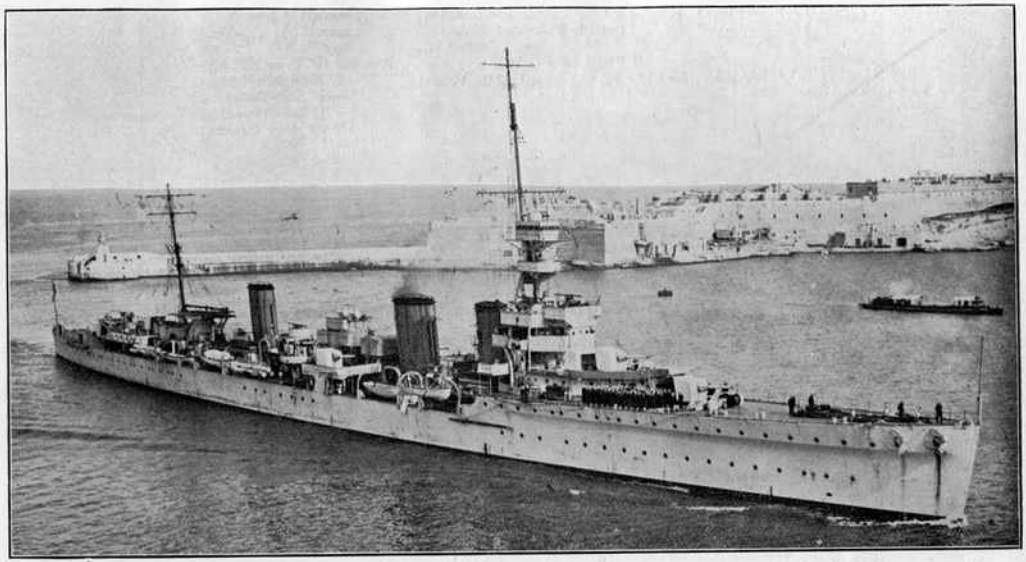
Displacement, 7,550 tons.
Complement, 572/577.

Length { *p.p.* 535 feet / *o.a.* 570 feet } Beam 54½ feet. Draught { *mean* 16½ feet. / *max.* [illegible] feet.

Guns:
7—6 inch, 50 cal. (**Dir. Con.**)
3—4 inch AA.
4—3 pdr.
2—2 pdr. pom-pom.
2 M.G.
8 Lewis
Torpedo tubes (21 inch):
16 in., four quadruple mountings, *above water*.

Armour (H.T.):
3″ Side (amidships)
2½″—1½″ Side (bow)
2″ Side (stern)
1″ Upper Deck (amidships)
1″ Deck (over rudder)

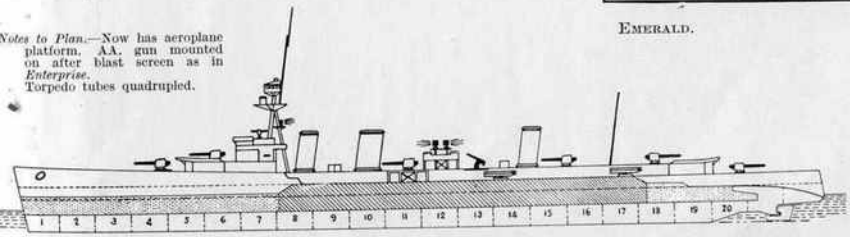
Machinery: Turbines, 4 sets Brown-Curtis (geared). 4 screws. Designed S.H.P. 80,000=33 kts. (light), 32 kts. (*full load*). Boilers: 8 Yarrow small tube. Fuel (oil only): *normal*, 650 tons; *maximum*, 1,746 tons.

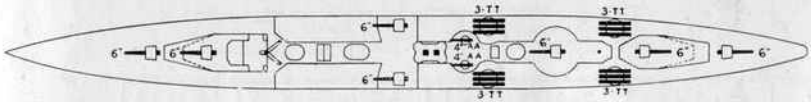


Emerald.

1926 *Photo, Grand Studio, Malta.*

Notes to Plan.—Now has aeroplane platform. AA. gun mounted on after blast screen as in *Enterprise*.
Torpedo tubes quadrupled.





Ahead: **3** to **4**—6 inch.

Broadside: **6**—6 inch, **8**—21 inch T.T.

Astern: **3** to **4**—6 inch.

Notes for both Ships, "E" Class.

Gunnery Notes.—Elevation of 6 inch, up to 40°. Heavy Director on foremast. R.F. on foreward bridge.

Engineering Notes.—Geared turbines, 4 shafts. For wing shafts, engine-rooms are forward; for inner shafts, engine-rooms are aft. H.P. and L.P. turbines in same casing; astern turbine in exhaust casing of L.P. turbines. 8 boilers in 4 w.t. compartments, part forward of amidships magazines and part abaft forward engine-room. This arrangement of boiler rooms is responsible for the somewhat unusual spacing of the funnels.

General Notes.—Begun under Emergency War Programme. A third ship, *Euphrates*, ordered from Fairfield Co., cancelled. They were designed early in 1918, to have a speed equal to that of any of the German Light Cruisers then existing or likely to be built. The distribution of guns was recommended by Gunnery Officers on the basis of war experience and is generally the same as that for *Hawkins*, *Raleigh*, &c., described hereafter. Owing to their high speed and fine entry, the "G" and "D" classes of Light Cruisers without trawler bows, proved very wet forward. To remedy this defect, these "E" class Cruisers have been given a very high freeboard for the whole length of forecastle. Cost of these ships was £1,617,062 for *Emerald* and £1,751,854 for *Enterprise*. Full load displacement said to exceed 9,000 tons. Refit 1931.

Name	*Builder*	*Machinery*	*Ordered*	*Begun*	*Completed*	*Trials: H.P. kts.*	*Turbines*
Emerald	*Armstrong	Wallsend	7/3/18	Sept. 23/18	Jan. 14'26	80450=32·9	Brown-Curtis
Enterprise	†Clydebank	Clydebank	7/3/18	June 28/18	Jan., '26	(*Enterprise* not tried).	Brown-Curtis

*Towed to Chatham D.Y., †Devonport D.Y. for completion.

(Improved Birmingham Class—First 3 Ships.)

EFFINGHAM (8th June, 1921), **FROBISHER** (20th March, 1920), **HAWKINS** (1st Oct., 1917).

Displacement, *Effingham* 9770 tons, *Frobisher* 9860 tons, *Hawkins* 9800 tons.
Complement, 712/749.

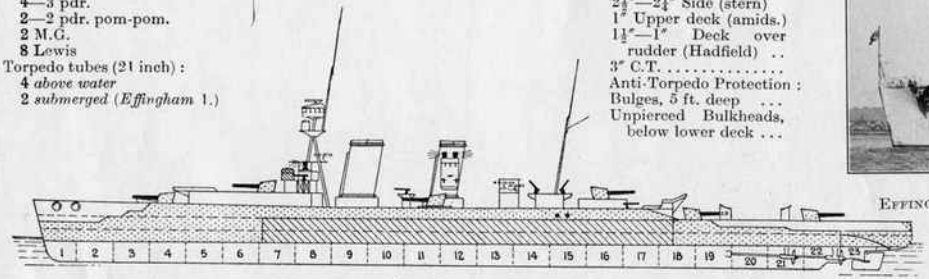
Length { *p.p.* 565 feet / *o.a.* 605 „ } Beam { *w.l.* 58* feet. / outside bulges 65 „ } Draught { *mean* 17½ feet. / *max.* 20½ „ }
*Approximate.

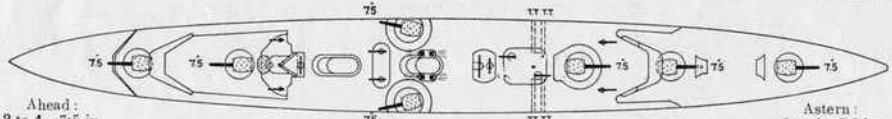
Guns:
7—7·5 inch, 45 cal., Mk. VI (**Dir. Con.**)
3 or 4—4 inch AA.
4—3 pdr.
2—2 pdr. pom-pom.
2 M.G.
8 Lewis

All fitted as Flagships. *Hawkins* has 7·5 in., 50 cal., Mk. V. and a fourth 4 inch.

Torpedo tubes (21 inch):
4 *above water*
2 *submerged* (*Effingham* 1.)

Armour (H.T. or Nickel):
3″—2″ Side (amidships)
2½″—1½″ Side (bow) ..
2½″—2½″ Side (stern)
1″ Upper deck (amids.)
1½″—1″ Deck over rudder (Hadfield) ..
3″ C.T. .....
Anti-Torpedo Protection:
Bulges, 5 ft. deep ...
Unpierced Bulkheads, below lower deck ...





Ahead: 2 to 4—7·5 in.

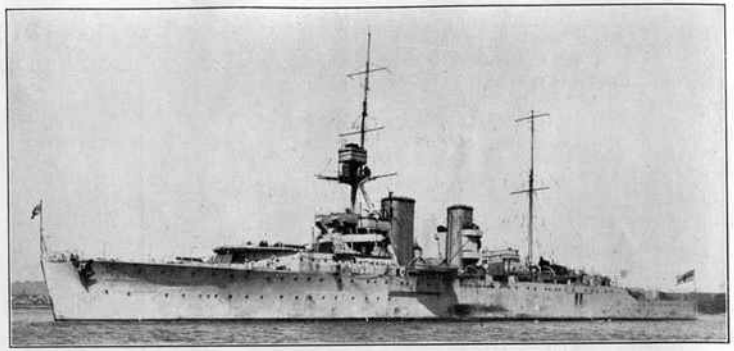
Astern: 2 to 4—7·5 in.

Broadside: 6—7·5 in., 3—21 in. tubes.

Machinery: Turbines, Brown-Curtis or Parsons (geared cruising). Designed S.H.P. in *Hawkins*, 60,000=30 kts. *Effingham* and *Frobisher*, 65,000=30·5 kts. 4 screws. Boilers: 12 Yarrow (small tube). Fuel: as completed, 1000 tons oil *normal*, 2150 *maximum*. *Hawkins*, as re-constructed, 2600 tons *maximum*.

Gunnery Notes.—7.5's are a Vickers type B.L. on centre-pivot mountings and with H.A. elevation. Very handy guns, but at H.A. (30°) elevation breeches close to deck. Hoists very noisy and interfere with telephonic communication with control stations. Unofficially stated that muzzle velocity is high, so that guns have practically a range only limited by *maximum* visibility. Armaments originally projected for this class were (*a*) mixed battery of 9.2 inch and 6 inch. (*b*) 14—6 inch. Heavy type director on foremast. Third AA. gun in *Effingham* and *Frobisher* is on Q.D. between 7.5 inch guns.

Torpedo Notes.—*Above water* tubes are single, mounted athwartships on upper deck below mainmast. *Submerged* tubes abeam of C.T.

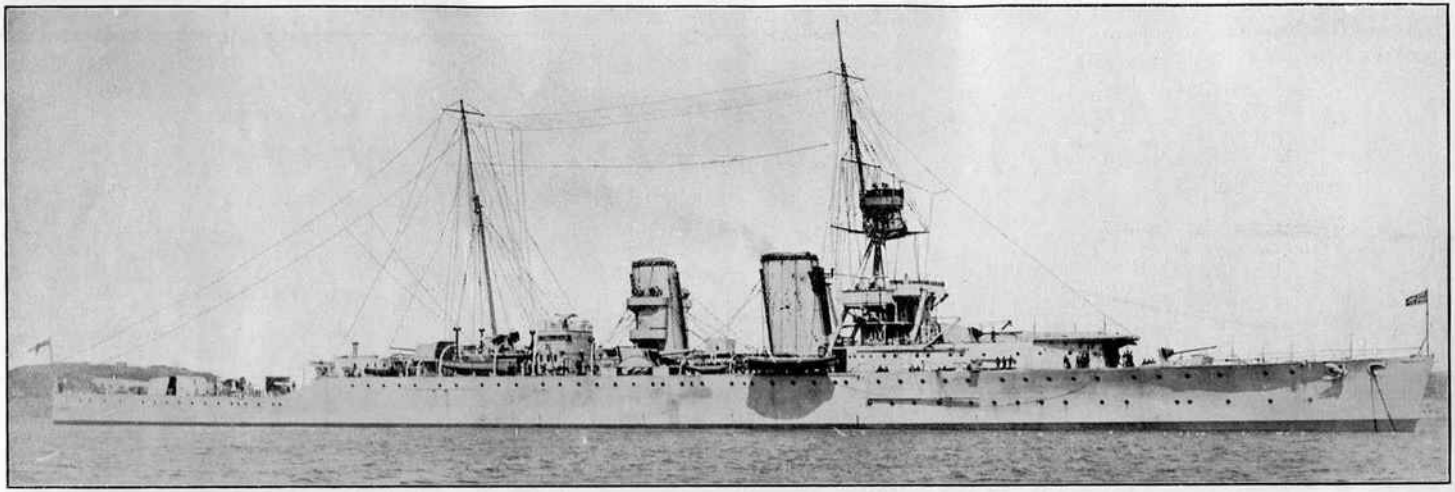


Effingham. 1924 *Photo, Abrahams, Devonport.*

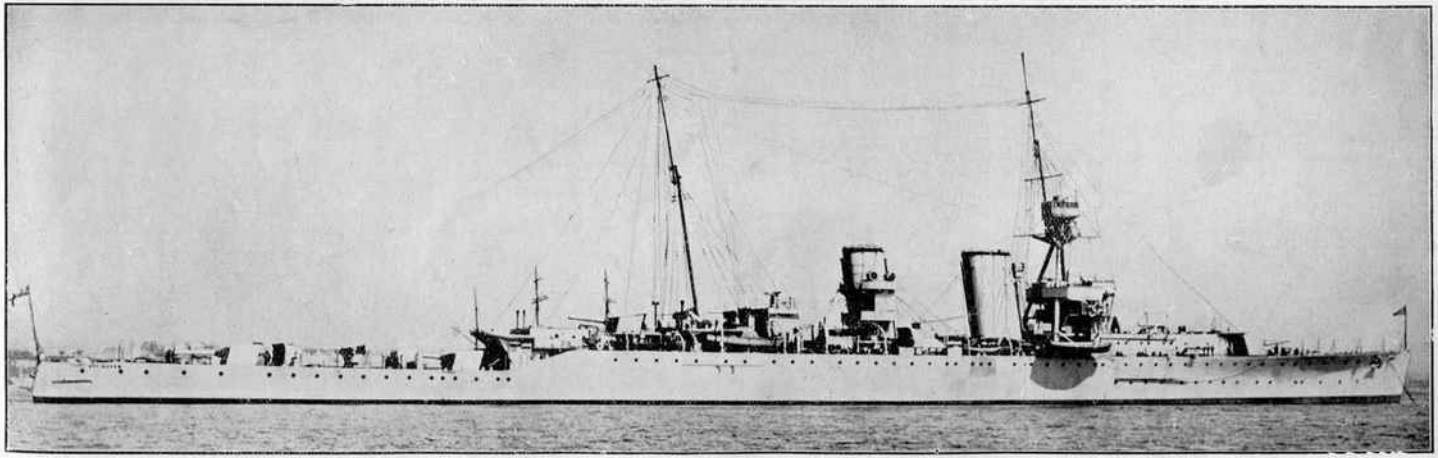
General Notes.—Begun under Emergency War Programme. One unit of this class was accelerated in building, and completed as the Aircraft Carrier *Vindictive*, but was re-converted into a Cruiser, 1923 (see later page for particulars). Another, *Raleigh*, was wrecked in August, 1922. *Hawkins* cost £1,636,745; *Effingham*, £2,175,000; *Frobisher*, £2,035,915. Refits: *Frobisher*, 1928; *Hawkins*, 1929. All vessels of this class are excellent seaboats. *Frobisher* serving as a Cadets Sea-going Training Ship.

Frobisher. 1933, *Gieves, Ltd.*

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials: H.P. kts.*	*Turbines*
Effingham	Portsmouth D.Y.	H. & Wolff	2 Ap., '17	July, '25		Brown-Curtis
Frobisher	Devonport D.Y.	Wallsend	2 Aug., '16	20 Sept. '24		Brown-Curtis
Hawkins	Chatham D.Y.	Parsons	June, '16	July 25, '19	60980=28 7	Parsons



EFFINGHAM. 1925 *Photo, Abrahams, Devonport.*



EFFINGHAM. 1925 *Photo, Abrahams, Devonport.*

1915-16 CRUISER

(Improved Birmingham Class—4th Ship.)

VINDICTIVE (ex *Cavendish*) (17th January, 1918.)

Displacement, 9996 tons.
Complement, 717.

Length { *p.p.*, 565 feet / *o.a.*, 605 feet } Beam { *waterline*, 58 feet / *outside bulges*, 65 feet }

Draught { *mean*, 17¼ feet / *max.*, 20½ feet }

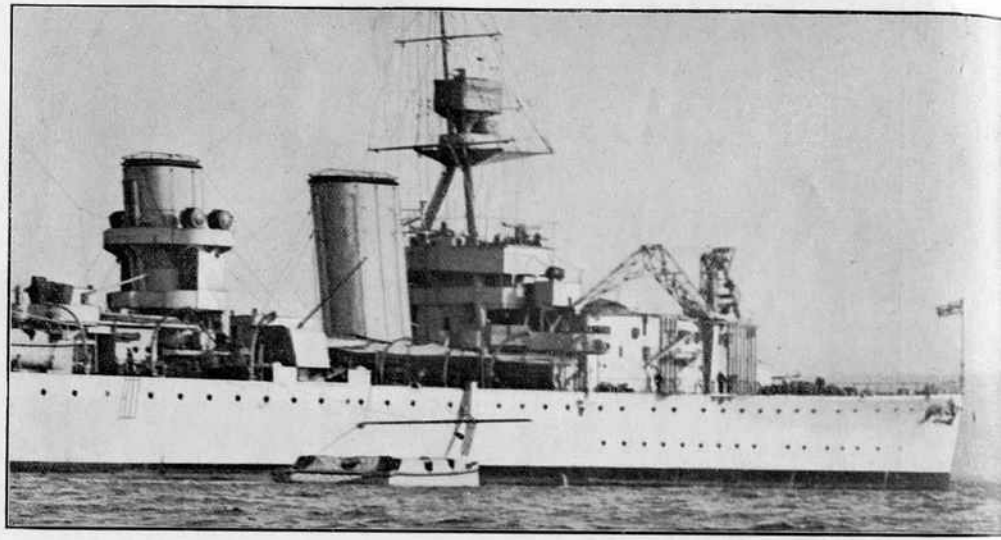
Guns :
6—7.5 inch, 50 cal. Mark V. (**Dir. Con.**)
3—4 inch AA.
4—3 pdr.
2—2 pdr. pom-pom.
8 Lewis.

Torpedo tubes (21 inch) :
4 *above water.*
2 *submerged.*

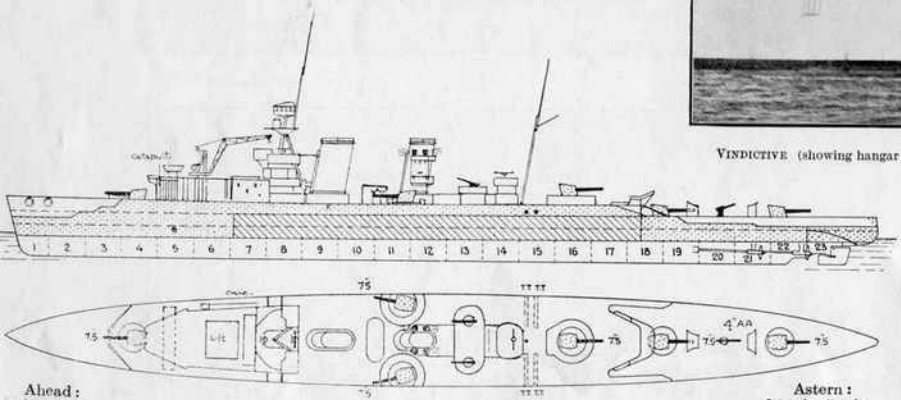
Flights carried :
1 Spotter Reconnaissance.
3 Fairey IIID seaplanes.

Armour (H.T. or Nickel) :
3″—2″ Side (amidships) ...
2½″—1½″ Side (forward and aft) .....
1″ Upper deck (amidships).
1½″ Deck over rudder (Hadfield) .....
3″ C.T. .....

Anti-Torpedo Protection :
Bulges, 5 feet deep.
Unpierced bulkheads below lower deck.



Vindictive (showing hangar and hydraulic crane). 1925 *Photo, Abrahams, Weymouth.*



Ahead : to **3**—7.5 in.

Astern : **2** to **4**—7.5 in.

Broadside : **5**—7.5 in., **3**—21 in. tubes.

Machinery : Parsons (geared) turbines. 4 screws. Boilers : Yarrow. Designed S.H.P. 60,000 = 30 kts. (trials, 63,600 = 29.12 kts.). Fuel : 800 tons coal and oil *normal* ; 800 tons coal + 1420 tons oil *maximum*.

Gunnery and Torpedo Notes.—As *Hawkins*, *Effingham* and *Frobisher* on previous page.

General Notes.—Built under Emergency War Programme by Harland & Wolff, Ltd. Commenced 29th June, 1916, under name of *Cavendish* as a unit of "Improved Birmingham" class, but renamed *Vindictive* and completed as an Aircraft Carrier, October, 1918. Re-converted into a cruiser 1923-25, but still retains aeroplane hangar forward. Refitted 1928.

Vindictive. 1932 *Photo, Gieves Ltd.*

("D" Class.)

DESPATCH (24th Sept., 1919),

DELHI (23rd Aug., 1918),

DURBAN (29th May, 1919), **DANAE** (26th Jan., 1918),

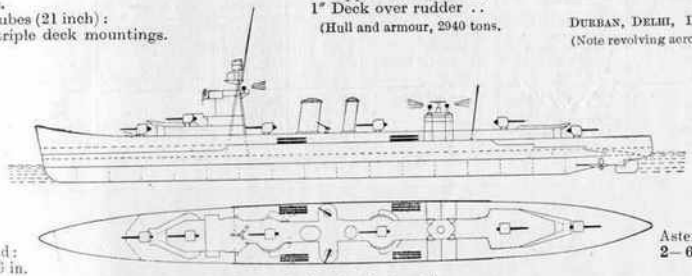
DAUNTLESS (10th April, 1918), **DRAGON** (29th Dec., 1917).

Length { *p.p.* 445 feet, *w.l.* 465½ ,, *o.a.* 472½ ,, } Beam, 46½ ft. Draught { *mean* 14½ ft. *max.* 16½ ft. } = 4850 tons.

Complements of all, 450/469. All except *Despatch* fitted as Flagships.

Guns:
6—6 inch, 50 cal. (**Dir. Con.**)
3—4 inch AA.
4—3 pdr.
2—2 pdr. pom-pom
2 M.G.
8 Lewis.
Torpedo tubes (21 inch):
12 in 4 triple deck mountings.

Armour (H.T.):
3″ Side (amidships) ...
2″, 1½″, 1¼″ Side (bow and stern) .....
1″ Upper deck (amids.)
1″ Deck over rudder ..
(Hull and armour, 2940 tons.

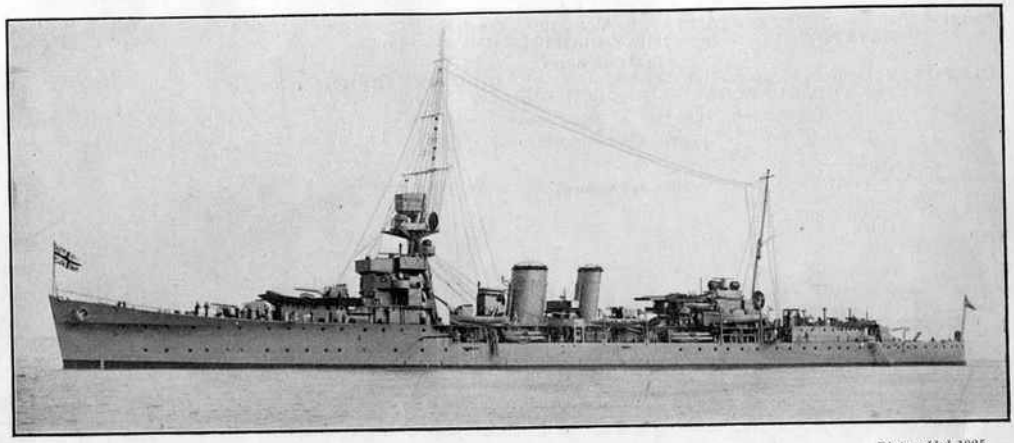


Broadside: 6—6 in., 6—21 in. tubes.

Machinery: Turbines (all-geared), Brown-Curtis or Parsons types. Designed S.H.P. 40,000 = 29 kts. 2 screws. Boilers: 6 Yarrow (small tube). Oil fuel only: *normal*, 300 tons; *maximum*, 1050 tons. Machinery and engineering stores = 945 tons.

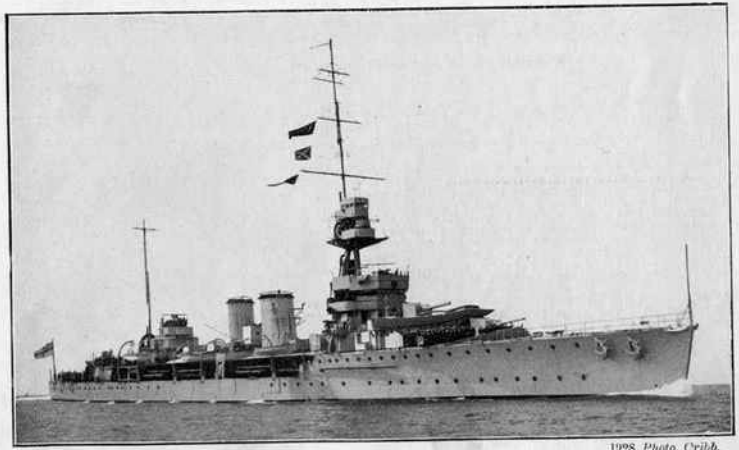
Name	*Builder*	*Machinery*	*Ordered*	*Begun*	*Completed*	*Trials: H.P. kts.*	*Turbines*
Despatch	Fairfield*	Fairfield	Mar., 1918	July, 1918	2 June, 1922		Brown-Curtis
Delhi	Armstrong	Wallsend	Sept., 1917	29 Oct., '17	June, 1919	41,381 = 28·5†	Brown-Curtis
Durban	Scotts*	Scotts	Sept., 1917	Jan., 1918	1 Sept. 1921	41,026 =	Brown-Curtis
Danae	Armstrong	Wallsend	Sept., 1916	Dec., 1916	July, 1918	40,463 =	Brown-Curtis
Dauntless	Palmer		Sept., 1916	Jan., 1917	Dec., 1918	42,808 =	Parsons
Dragon	Scott	Scott	Sept., 1916	Jan., 1917	Aug., 1918	40,035 =	Brown-Curtis

*Towed to following Dockyards for completion: *Despatch* to Chatham, *Durban* to Devonport.
† With PVs. out, and on deep draught.



DURBAN, DELHI, DESPATCH.
(Note revolving aeroplane platform and trawler bows.)

Photo added 1925.



DAUNTLESS. 1928 *Photo, Cribb.*

General Notes.—Emergency War Programme ships. Note that first three were ordered *before Cartisle* class. Design generally as *Ceres* class, but lengthened *about* 20 feet, to add a sixth 6-inch between foremast and first funnel; also triple tubes. Cost of *Delhi*, £840,182. Heavy director on foremast. *Dunedin* and *Diomede*, of this class, both transferred to New Zealand Navy, May, 1924 and October, 1925, respectively. *Dauntless* badly damaged by grounding off Halifax, Nova Scotia, July, 1928, and completely refitted 1929-30. *Danae*, *Delhi*, *Dragon*, all refitted 1929-30.

(Carlisle Class—5 Ships.)

CAIRO* (19th Nov., 1918), **CALCUTTA*** (9th July, 1918), **CARLISLE*** (9th July, 1918), **CAPETOWN*** (28th June, 1919), **COLOMBO*** (18th Dec., 1918).

(Ceres Class—5 Ships.)

CARDIFF* (ex *Caprice*, 12th April, 1917), **CERES** (24th March, 1917), **COVENTRY*** (ex *Corsair*, 6th July, 1917), **CURACOA*** (5th May, 1917), **CURLEW** (5th July, 1917).

Displacement, 4290 tons. Complement, 400/437.

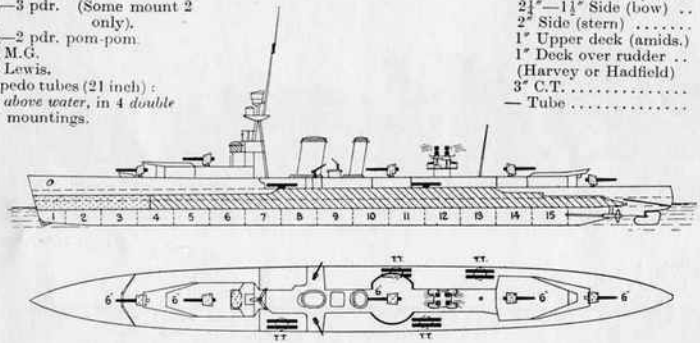
Length { *p.p.* 425 feet / *o.a.* 450 „ } Beam, 43½ feet. Draught { *mean* 14 feet 1 inch. / *max.* 16¼ „

Guns:
5—6 inch, 50 cal. (**Dir. Con.**)
2—3 inch AA.
4—3 pdr. (Some mount 2 only).
2—2 pdr. pom-pom.
2 M.G.
8 Lewis.

Torpedo tubes (21 inch):
8 *above water*, in 4 *double* mountings.

*Fitted as Flagships.

Armour (H.T.):
3″ Side (amidships) ...
2½″—1½″ Side (bow) ..
2″ Side (stern) .....
1″ Upper deck (amids.)
1″ Deck over rudder .. (Harvey or Hadfield)
3″ C.T. .....
— Tube .....



Ahead: 2—6 in.

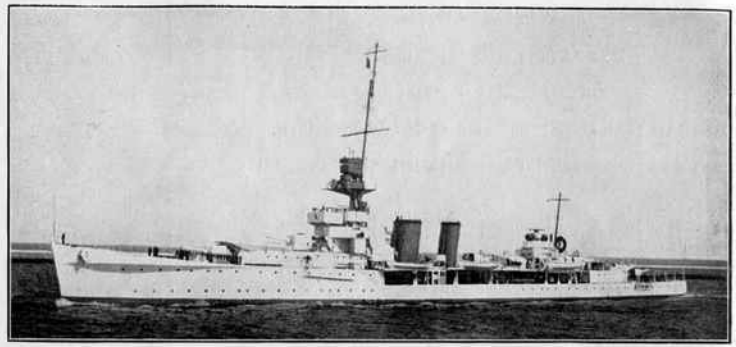
Broadside: 5—6 in., 4—21 in. tubes.

Astern: 2—6 in.

Machinery: Turbines (all-geared), see Table. 2 screws in all. Designed S.H.P. 40,000 = 29 kts. Boilers: Yarrow. Fuel (oil only): 300 tons, *normal*; *maximum*, 950 tons.

General Notes.—Cardiff class Emergency War Programme ships, ordered April, 1916. Very wet forward, to remedy which defect the later *Carlisle* and *Dragon* classes were given "trawler" bows. Heavy type Director on foremast. *Cairo* class Emergency War Programme ships, ordered June-July, 1917, that is *after* the first three units of "D Class" (*Danae*, *Dragon*, *Dauntless*) were ordered. In these, ships "trawler" bows were added, to remedy defects shown by *Ceres* and *Calypso* classes. Conning tower also abolished. Heavy director on foremast. *Curacoa* was mined in 1919, and refitted 1919-20. Recent refits: *Carlisle*, *Coventry*, *Curacoa*, *Curlew*, 1928-29; *Cardiff*, *Ceres*, *Colombo*, 1929-30.

To distinguish: From "*D*" class Cruisers—No 6 inch between foremast and first funnel. The same point separates this class from the *Caledon* class.

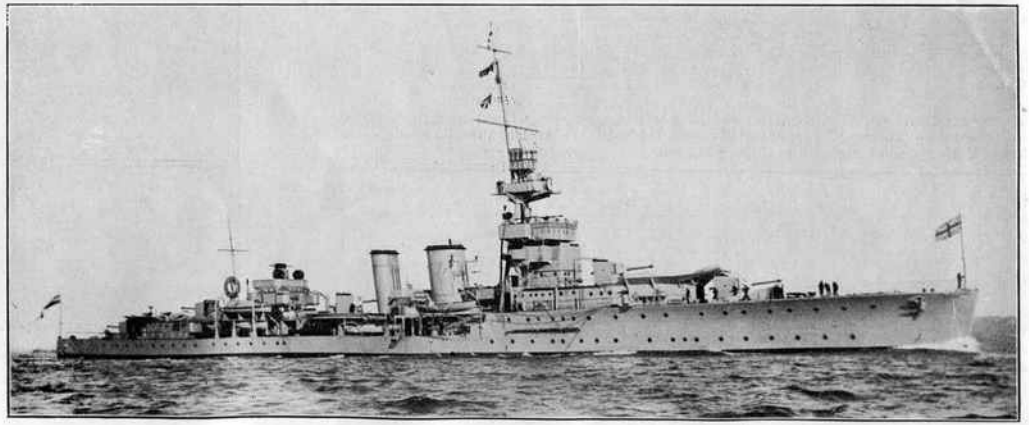


Colombo. 1926 *Photo, Grand Studio, Malta.*

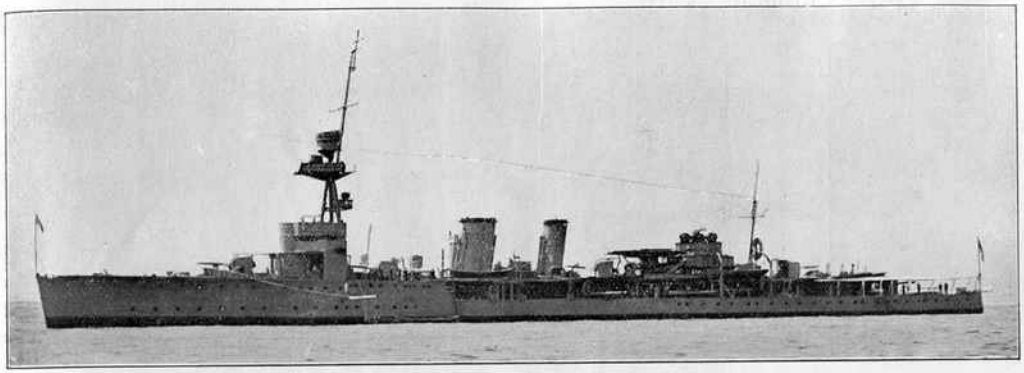
Carlisle and *Capetown* originally had a hangar forward, but this has been removed and replaced by standard bridge work. *Curacoa* and several others now carry maintopmasts.

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials H.P.*	*kts.*	*Turbines*
Cardiff	Fairfield	Fairfield	July, 1916	July, 1917	41,450	= 28·96	B.-Curtis A.G.
Ceres	Clydebank	Clydebank	Apl.26,'16	June, 1917	39,425	= 29·1	B.-Curtis A.G
Coventry	Swan, Hunter	Wallsend	Aug., 1916	Feb., 1918	39,967	=	B.-Curtis A.G.
Curacoa	Pembroke D.Y.	Harland & Wolff	July, 1916	Feb., 1918	40,428	=	B.-Curtis A.G.
Curlew	Vickers	Vickers	Aug., 1916	Dec., 1917	40,240	= 28·07	Parsons A.G.
Cairo	Cammell Laird	Cammell Laird	28 Nov.,'17	24 Sep.,'19			Parsons
Calcutta	Vickers	Vickers	Oct., 1917	21 Aug.,'19			Parsons
Carlisle	Fairfield	Fairfield	Oct., 1917	11 Nov.,'18	40,930	= 28·45	B.-Curtis
Capetown	Cammell Laird*	Cammell Laird	23 Feb.,'18	Feb., '22			Parsons
Colombo	Fairfield	Fairfield	Dec., 1917	June, '19			B.-Curtis

*Towed to Pembroke D.Y. for completion.



Curacoa (and others of *Ceres* class). 1926 *Photo, S. T. Abrahams, Weymouth.*



CALEDON. (Revolving aeroplane platform). 1921 *Photo, Abrahams, Devonport.*

(CALEDON CLASS—3 SHIPS.)

CALEDON* (25th Nov., 1916), **CALYPSO** (24th Jan., 1917), **CARADOC** (23rd Dec., 1916).

Displacement, 4180 tons. Complement, 400/437.

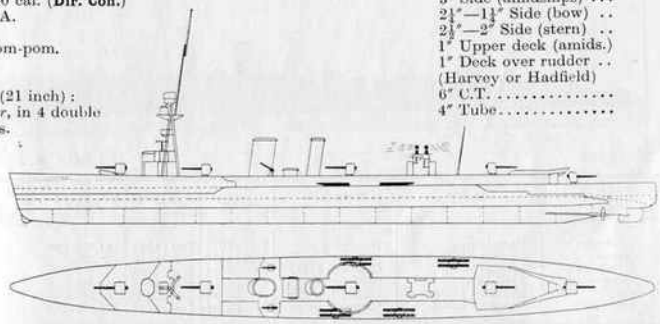
Length { *p.p.* 425 feet / *o.a.* 450 „ } Beam, 42¾ feet. Draught { *mean* 14 ft. 1 in. / *max.* 16½ feet.

* Fitted as Flagship.

Guns:
5—6 inch, 50 cal. (**Dir. Con.**)
2—3 inch AA.
4—3 pdr.
2—2 pdr. pom-pom.
2 M.G.
8 Lewis.

Torpedo tube (21 inch):
8 *above water*, in 4 double mountings.

Armour (H.T.):
3″ Side (amidships) ...
2½″—1½″ Side (bow) ..
2½″—2″ Side (stern) ..
1″ Upper deck (amids.)
1″ Deck over rudder ..
(Harvey or Hadfield)
6″ C.T. .....
4″ Tube.....



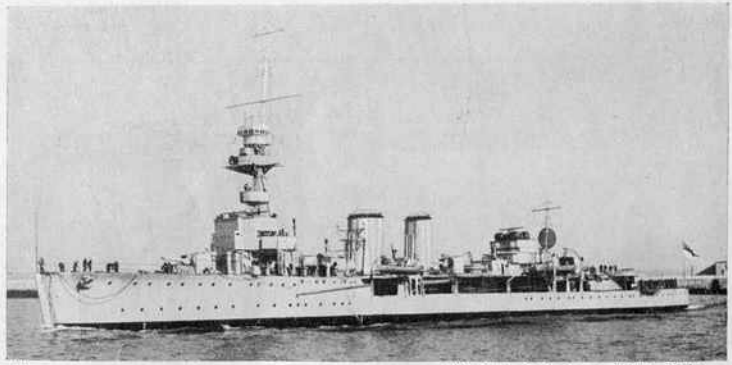
Ahead: 1—6 in. Broadside: 5—6 in., 4—21 in. tubes. Astern: 2—6 in.

Machinery: Turbines (all-geared), Parsons. 2 screws. Designed S.H.P. 40,000 = 29 kts.
Boilers: 8 Yarrow. Fuel (oil only): *normal*, 300 tons; *maximum*, 935 tons.

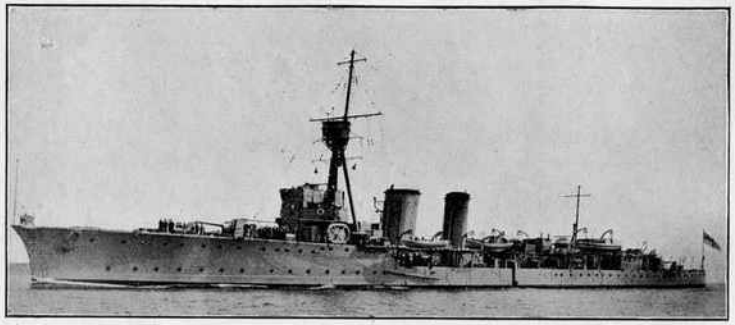
Gunnery Notes.—Mark of 6-inch gun introduced in this class and mounted in later Cruisers has about 40° elevation. Heavy type Director.

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials: H.P.*	*kts.*
Caledon	Cammell Laird	Cammell Laird	Mar.17,'16	Mar.,'17	47,887	=
Calypso	Hawthorn Leslie	Hawthorn Leslie	Feb.7,'16	June 21,'17	43,312	=
Caradoc	Scott S.B. Co.	Scotts	Feb.,'16	June,'17	41,196	=

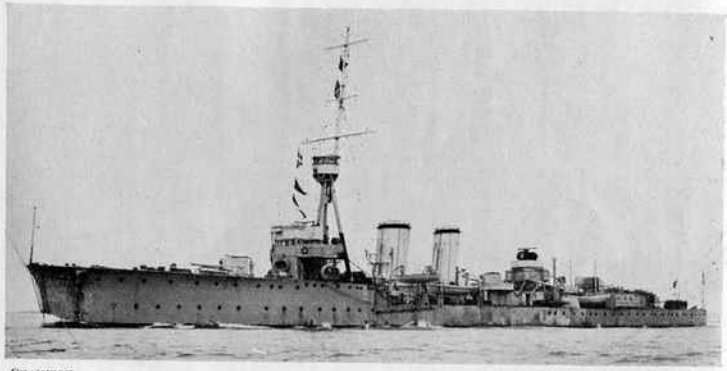
General Notes.—Emergency War Programme. When new, they could make 29-30 kts. Are very wet forward, the fo'sle 6 inch being almost unfightable in a head sea. *Cassandra*, of this class, built by Messrs. Vickers Ltd., lost in Baltic by mine, soon after Armistice was signed. *Caledon* refitted 1926-1927, *Caradoc* 1927-28, *Calypso* 1929.



CALYPSO. 1921 *Photo, S. L. Cassar, Valetta, Malta.*



CAMBRIAN. 1928 *Photo, Abrahams & Sons.*



CHAMPION. 1921 *Photo, Cribb, Southsea.*

CHAMPION (May 29th, 1915), **COMUS** (16th Dec., 1914).
CAMBRIAN (3rd March, 1916), **CANTERBURY** (21st Dec., 1915),
CASTOR (28th July, 1915), **CONSTANCE** (12th Sept., 1915).

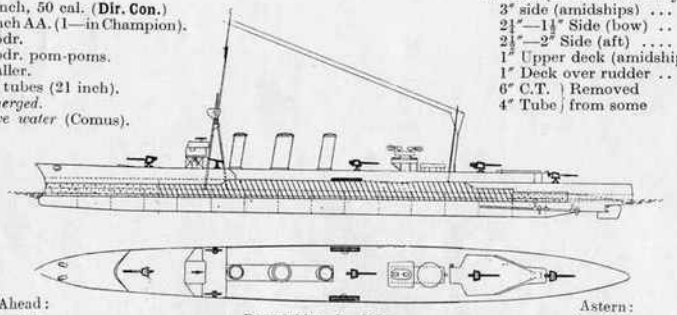
Displacement, 3920 tons. Complement, 348/357.

Length (*p.p.*) 420, (*o.a.*) 446 feet. Beam, 41½ feet. Draught, 16¼ feet *max.* 13½ *mean.*

Guns:
4—6 inch, 50 cal. (**Dir. Con.**)
2—3 inch AA. (1—in Champion).
4—3 pdr.
2—2 pdr. pom-poms.
9 Smaller.

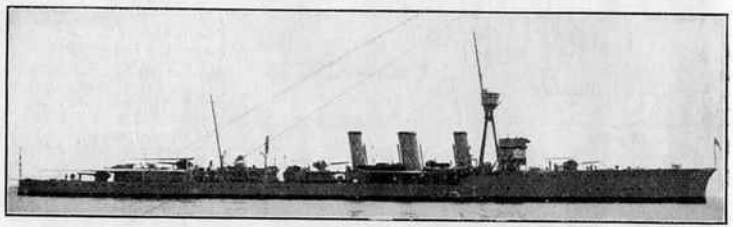
Torpedo tubes (21 inch).
2 *submerged.*
4 *above water* (Comus).

Armour (H.T. and Harvey):
3″ side (amidships) ...
2½″—1½″ Side (bow) ..
2½″—2″ Side (aft) ....
1″ Upper deck (amidships)
1″ Deck over rudder ..
6″ C.T. } Removed
4″ Tube } from some



Ahead: 1—6 in. Broadside: 4—6 in. Astern: 2—6 in.

Machinery: Turbine: Parsons or Brown-Curtis. (See notes tabulated below). Boilers: 8 Yarrow. Designed H.P. 40,000 = 29 kts. Fuel (oil only): *normal*, 420/482 tons; *maximum*, 841/917 tons.

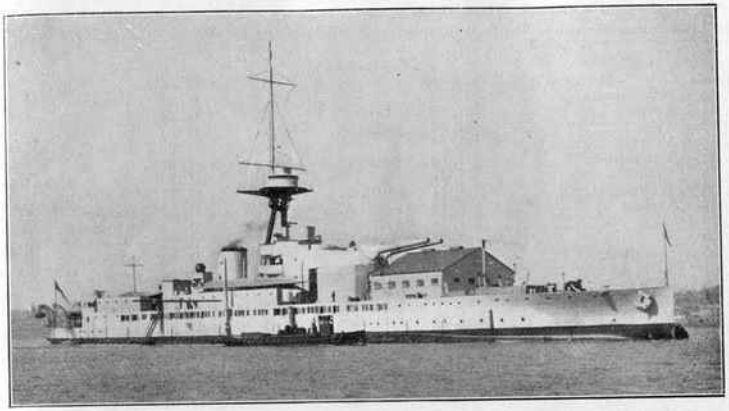


COMUS. 1927 *Photo, R. Perkins, Esq.*

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials:*	*Turbines*
Champion	Hawthorn	Hawthorn	Mar., 1914	Dec., 1915	41,000=29	Parsons A.G.
Comus	Swan, Hunter	Wallsend	Nov., 1913	May, 1915	32,736=	Parsons I.R.
Cambrian	Pembroke	Cammell Laird	Dec., 1914	May, 19:6		Parsons I.R.
Canterbury	Clydebank	Clydebank	Oct.14,'14	May, 1916	40,100=	Brown-Curtis
Castor	Cammell Laird	Cammell Laird	Oct.28,'14	Nov., 1915	42,337=	Parsons I.R.
Constance	Cammell Laird	Cammell Laird	Jan.25,'15	Jan., 1916	41,892=	Parsons I.R.

General Notes.—Champion and Comus.—1913-14 Estimates. Remainder 1914-15 Estimates. Light director in foretop. *Cambrian* and *Canterbury* completed refits March and Jan., 1926, respectively. *Castor* refitted 1925-26. *Constance* 1926-27. Worn out and should be scrapped soon.

Originally had 2—6 inch and 8—4 inch; in 1916-17, 3—6 inch and 6—4 inch and tripod mast added; in 1918, 4—6 inch and no 4 inch. Much overloaded and rolls badly, but very strongly built. Light Director on foretop. *Conquest* placed on disposal list, 1927. *Caroline* now a harbour drillship for R.N.V.R., at Belfast. *Calliope*, *Carysfort* and *Cleopatra* scrapped 1931.



EREBUS.

1920 *Photo, R. Perkins, Esq.*

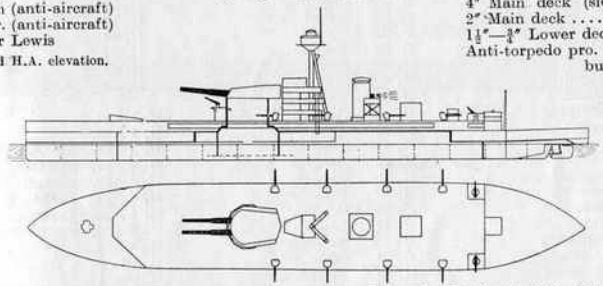
EREBUS (19th June, 1916), **TERROR** (18th May, 1916).

Displacement, 8000 tons. Complement, 300

Length, (*p.p.*) 380, (*o.a.*) 405 feet. Beam, 88 feet. *Mean* Draught, 11 feet.

Guns:
2—15 inch, 42 cal. (**Dir. Con.**)*
5—4 inch in *Terror*, 2 in *Erebus*.
2—3 inch (anti-aircraft)
2—2 pdr. (anti-aircraft)
4 M.G. or Lewis
* and H.A. elevation.

Armour:
4″ Bulkheads, F. & A.
8″ Barbette .....
13″—4¼″ Gunhouse ....
4″ Box citadel (over magazines) .....
6″ C.T. .....
1″ Fo'cle & upper decks
4″ Main deck (slopes)
2″ Main deck .....
1½″—¾″ Lower deck ..
Anti-torpedo pro. bulges.



Machinery: Triple expansion. 2 screws. Boilers: Babcock. Designed H.P. 6000=12 kts

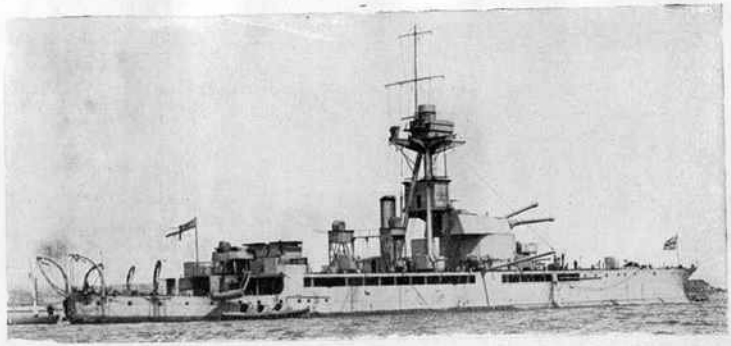
Fuel: 650 tons *normal*, 750 tons, *maximum*, oil only.

Gunnery Notes.—15 inch are high angle and can range up to 40,000 yards. Smoke screen apparatus fitted. *Erebus* has 15 inch removed from *M. Ney*.

Special Protection.—Bulges about 15 feet deep, sub-divided into 50 w.t.c

Name	*Builder and Machinery*	*Begun*	*Completed*	*Trials*
Erebus	Harland & Wolff (Govan)	Oct., 1915	Sept., 1916	7244 H.P. = 14·1 kts.
Terror	Harland & Wolff (Belfast)	Oct., 1915	Aug., 1916	6235 H.P. = 13·1 kts.

General Notes.—Both Emergency War Programme. *Erebus* fitted out as Cadets' T.S., with extra cabin accommodation on upper deck, and other alterations, but no longer so employed.



MARSHAL SOULT.

1923 *Photo, Abrahams, Devonport.*

MARSHAL SOULT (17th June, 1915).

Displacement, 6670 tons. Complement, 228.

Length, 340 (*p.p.*), 355⅜ (*o.a.*) feet. Beam, 90¼ feet. Draught, 10¼ feet.

Guns: 2—15 inch (DIR. CON.). H. A. elevation, 8—4 inch, 2—3 inch AA., 2—2 pdr. AA., 4 Lewis (disposed similarly to *Erebus* and *Terror*). Armour: 8″ Barbette, 13″—4¼″ Gunhouse; 4″ Bulkheads fore and aft, 6″ C.T., 4″—1″ Box Citadel over Magazine, 1″ Fo'xle Deck, 2″—1½″ Upper Deck, Lower Deck 3″ at bow, 1½″ at stern, 1″ Navig. Position. Deep bulge Protection.

Machinery: 2 sets Diesel. 4 screws. Designed H.P. 1500 = 6.7 kts. Fuel: 235 tons, *maximum* oil only.

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials*
M. Soult	Palmer	Vickers	Jan., 1915	Nov., 1915	1898 H.P. = 6·6 kts.

General Notes.—Emergency War Programme. Serves as Gunnery Training Ship at the Nore. Sister Ship *M. Ney* now Hulk *Vivid*, at Devonport.

TERROR.

1919 *Photo.*

DESTROYERS.

Pendant Numbers.

The following is a list of Flotilla Leader and Destroyer Pendant Numbers, as officially communicated to *Fighting Ships* by the Admiralty :—

D Flag Superior.

Pendants.	Ship.
D, 00	Stuart, R.A.N.
D, 01	Montrose.
D, 02	Senator.
D, 03	
D, 04	Seraph.
D, 05	
D, 06	
D, 07	
D, 08	
D, 09	
D, 10	
D, 11	
D, 12	Sportive.
D, 14	Swallow.
D, 15	
D, 16	
D, 17	
D, 18	
D, 19	Malcolm.
D, 20	Wallace.
D, 21	Wryneck.
D, 22	Waterhen, R.A.N.
D, 23	Vimiera.
D, 24	Walrus.
D, 25	Warwick.
D, 26	Watchman.
D, 27	Walker.
D, 28	Vanity.
D, 29	Vanessa.
D, 30	Whirlwind.
D, 31	Voyager, R.A.N.
D, 32	Versatile.
D, 33	Vimy.
D, 34	Velox.
D, 35	Wrestler.
D, 36	Vivacious.
D, 37	Vortigern.
D, 38	Ambuscade.
D, 39	Amazon.
D, 40	Spenser.
D, 41	Walpole.
D, 42	Windsor.
D, 43	Wessex.
D, 44	
D, 45	Westminster.
D, 46	Winchelsea.
D, 47	Westcott.
D, 48	Vidette.
D, 49	Valentine.
D, 50	Shakespeare.
D, 51	Vectis.
D, 52	Vega.
D, 53	Venetia.
D, 54	Vanquisher.
D, 55	Vesper.
D, 56	Wolfhound.
D, 57	Violent.
D, 58	
D, 59	
D, 60	Campbell.
D, 61	Valkyrie.
D, 62	Wild Swan.
D, 63	Verity.
D, 64	Vansittart.
D, 65	Codrington.
D, 66	Wivern.
D, 67	Wishart.
D, 68	Vampire, R.A.N.
D, 69	Vendetta, R.A.N.
D, 70	Mackay.
D, 71	Volunteer.
D, 72	Veteran.
D, 73	Vivien.
D, 74	Wanderer.
D, 75	Venomous.
D, 76	Witherington.
D, 77	Whitshed.
D, 78	Wolverine.
D, 79	
D, 80	
D, 81	Bruce.
D, 82	Valorous.
D, 83	Broke.
D, 84	Keppel.
D, 85	Shikari.
D, 86	Thracian.
D, 87	Venturous.
D, 88	Wren.
D, 89	Witch.
D, 90	Douglas.
D, 91	Viceroy.
D, 92	Viscount.
D, 93	Verdun.
D, 94	Whitehall.
D, 95	Woolston.
D, 96	Worcester.
D, 97	Whitley.
D, 98	Wolsey.
D, 99	

H Flag Superior—Destroyers

Pendants.	Ship.
H, 00	Comet.
H, 01	
H, 02	
H, 03	
H, 04	Tenedos.
H, 05	
H, 06	Shamrock.
H, 07	Defender.
H, 08	
H, 09	Acasta.
H, 10	
H, 11	Basilisk.
H, 12	Achates.
H, 14	Active.
H, 15	
H, 16	Daring.
H, 17	
H, 18	Sabre.
H, 19	Seafire.
H, 20	Searcher.
H, 21	Scimitar.
H, 22	Diamond.
H, 23	
H, 24	Champlain, R.C.N.
H, 25	Serene.
H, 26	Sardonyx.
H, 27	
H, 28	Sturdy.
H, 29	Thanet.
H, 30	Beagle.
H, 31	
H, 32	Abdiel.
H, 33	Vanoc.
H, 34	Turbulent.
H, 35	
H, 36	Antelope.
H, 37	
H, 38	Delight.
H, 39	Skate.
H, 40	Anthony.
H, 41	Ardent.
H, 42	Arrow.
H, 43	
H, 44	Trojan.
H, 45	Acheron.
H, 46	Tyrant.
H, 47	Blanche.
H, 48	Crescent.
H, 49	Diana.
H, 50	Stronghold.
H, 51	Scout.
H, 52	Scotsman.
H, 53	Dainty.
H, 54	Saladin.
H, 55	Vancouver, R.C.N.
H, 56	Trusty.
H, 57	Spindrift.
H, 58	Salmon.
H, 59	Tetrarch.
H, 60	Crusader.
H, 61	
H, 62	
H, 63	
H, 64	Duchess.
H, 65	Boadicea.
H, 66	
H, 67	
H, 68	
H, 69	
H, 70	
H, 71	Tempest.
H, 72	Thisbe.
H, 73	Thruster.
H, 74	
H, 75	Decoy.
H, 76	
H, 77	Boreas.
H, 78	
H, 79	
H, 80	Brazen.
H, 81	Torrid.
H, 82	Restless.
H, 83	Cygnet.
H, 84	Brilliant.
H, 85	Rowena.
H, 86	
H, 87	
H, 88	Wakeful.
H, 89	
H, 90	
H, 91	Bulldog.
H, 92	
H, 93	
H, 94	
H, 95	Winchester.
H, 96	
H, 97	
H, 98	
H, 99	
H, 1 Ans.	
H, 2 Ans.	
H, 3 Ans.	Anzac, R.A.N.
H, 4 Ans.	Stalwart, R.A.N.
H, 5 Ans.	Success, R.A.N.
H, 6 Ans.	Tattoo, R.A.N.
H, 7 Ans.	Tasmania, R.A.N.
H, 8 Ans.	Swordsman, R.A.N.
H, 9 Ans.	
H Ans. 0	
H Ans. 1	
H Ans. 2	
H Ans. 3	
H Ans. 4	
H Ans. 5	
H Ans. 6	
H Ans. 7	
H Ans. 8	
H Ans. 9	

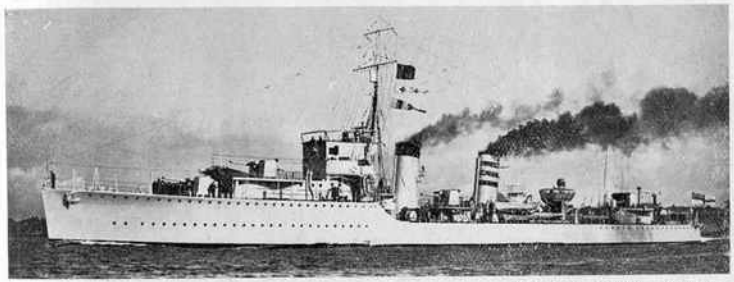
Funnel Markings.

The following revised scheme of Funnel Markings of Destroyer Flotillas was officially notified to take effect from April 4th, 1925 :—

(*a*) Foremost funnel of leaders in Mediterranean and Home Fleets will be marked with a 4ft. black band round the top.

(*b*) Divisional commanders will have a 2ft. band three feet from the top of the foremost funnel, as follows :— Home Fleet, white ; Mediterranean Fleet, black.

1 Admiralty Type.



CODRINGTON. 1930 *Photo, Abrahams, Devonport.*

Codrington.

Built by Swan-Hunter. Laid down, 1928, launched, August 7, 1929. Completed, June, 1930.

Displacement: 1540 tons standard. 2000 tons full load. Dimensions: 332 × 33¾ × 12¼ feet. Guns: 5—4.7 inch, 2—2 pdr. pom-pom 5 M.G. Tubes: 8—21 inch on quadruple mounts. Machinery: Geared Parsons turbines. 2 screws. Designed S.H.P. 39,000=35 kts. Boilers: Yarrow; working pressure 300 lbs. with superheaters. Oil fuel: about 500 tons. Complement.

Note.—On Trials *Codrington* maintained a mean speed of 38 kts. for 4 hours, reaching 40 knots at times, during Trials. At no time was the machinery pressed in any way, in conformance with Admiralty instructions. If maximum power had been worked up, this ship would have achieved record figures for British Navy.

6 Admiralty Large Design. (Scott type.)

CAMPBELL. 1932 *Photo, R. Perkins, Esq.*

5 *Cammell Laird*: ***Bruce, Campbell, Douglas, Mackay*** (ex *Claverhouse*), ***Malcolm.***
1 *Hawthorn Leslie*: ***Montrose.***

Displacement: 1530 tons. Dimensions: 320 (*p.p.*), 332¼ (*o.a.*) × 31¾ × 12¼ feet (*mean*) draught. Guns: 5—4.7 inch B.L. (Dir. Con.), 1—3 inch AA., 2—2 pdr. AA., 1 M.G., 4 Lewis. Tubes: 6—21 inch, in two triple mountings. Machinery: Parsons (all-geared) turbines in Cammell-Laird boats: Brown-Curtis in Hawthorn-Leslie boats. Designed S.H.P. 40,000=36.5 kts.* Boilers: Yarrow. Oil fuel: 504/401 tons. Complement, 183.

*On *trials*, light load draught; on deep load, 31 kts. with same S.H.P.

	Begun.	Launch.	Comp.		Begun.	Launch.	Comp.
Bruce	12/5/17	26/2/18	29 /5/18	*Mackay* ..	5/3/18	21/12/18	/6/19
Campbell ..	10/11/17	21/9/18	21/12/18	*Malcolm* ..	27/3/18	29/5/19	14/12/19
Douglas ..	30/6/17	8/6/18	30/8/18	*Montrose* ..	4/10/17	10/6/18	14/9/18

Stuart, of this class transferred to R.A.N. War loss: *Scott.*

General Notes to all destroyer Plans (British).

Triple tubes are diagrammatically shown as if mounted side by side on one level: actually the centre tube is above and between the other two.

E

5 Thornycroft Type (Shakespeare class).

SPENSER (now has tail Main Mast). 1920 *Photo, Seward, Weymouth.*

5 *Thornycroft*: ***Broke*** (ex-*Rooke*), ***Keppel, Shakespeare, Spenser, Wallace.*** Displacement: 1480 tons; Dimensions: 318¼ (*p.p.*), 329 (*o.a.*) × 31 ft. 9 in. × 12¼ feet (*mean*), 14¾ (*max.*) draught. Guns: **5**—4.7 inch B.L. (DIR. CON.), **1**—3 inch AA., **2**—2 pdr. pom-pom, **1** M.G., **4** Lewis. Tubes: **6**—21 inch in 2 triple deck mountings.

Machinery: Brown-Curtis all geared turbines. Designed S.H.P. 40,000 = 36 kts.§ 2 screws. Boilers: Thornycroft. Oil 550/250 tons (*Keppel*, 500/250). Complement, 183. §Light load on *trials*; on deep load, same S.H.P. = 31 kts.

General Notes.—Built under War Emergency Programme. Appearance almost exactly same as *Bruce, Campbell, &c.*, but these boats have the usual big, flat-sided Thornycroft funnels. No War Losses. *Cancelled* 1918: *Saunders, Spragge. Broke* was completed at Pembroke Dockyard, *Keppel* at Portsmouth and Pembroke. Plans as for *Bruce* on preceding page. Standard displacement is 1480 tons.

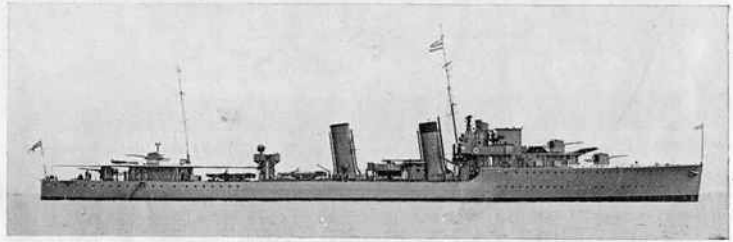
	Begun.	*Launch.*	*Comp.*	*Trials.*	*Cost.*
Broke	10/18	23/4/20	13/12/24	35.6 (*mean*) 38 (*max.*)	£409,394
Keppel	11/18	16/9/20	15/4/25	36.1 „	411,374
Shakespeare ...	10.16	7/7/17	10/17	38.74 „	
Spenser	10/16	22/9/17	12/17	37.76	
Wallace	8/17	26/10/18	2/19	37.72	

WALLACE. 1932 *Photo, R Perkins, Esq.*

"B," "C" and "D" class "Leaders."

KEITH. 1931 *Photo, Favour of Messrs. Vickers-Armstrong.*

1 *Vickers-Armstrong* ***Keith*** (June, 1930). 1330 tons.

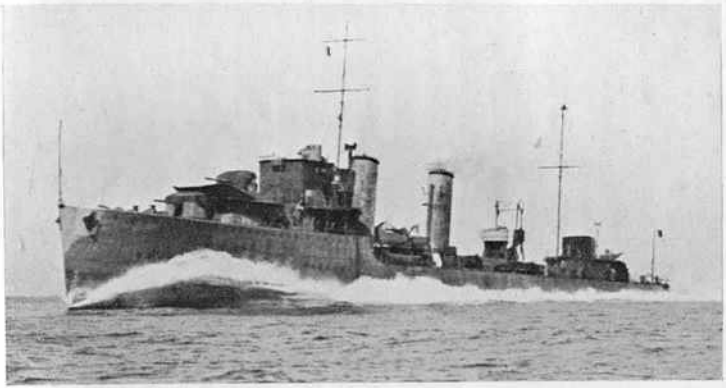


KEMPENFELT. 1932 *Photo, R Perkins, Esq.*

	Programme.
1 *White* ***Kempenfelt*** (Oct. 29, 1931). 1390 tons.	1929
1 *Portsmouth D.Y.* ***Duncan*** (July 6, 1932). 1400 tons.	1930
1 *Portsmouth D.Y.* ***Exmouth.***	1931
1 *Yarrow* ***Faulknor.***	1932

Although officially rated as "leaders," these vessels are only the ***"Beagle"*** design with a little extra staff accommodation.

8 "D" class



DARING at 38·2 kts. 1932 *Photo, Messrs. Thornycroft.*

Programme 1930
- 2 *Vickers-Armstrong:* ***Defender*** (Apl. 7, '32), ***Diamond*** (Apl. 8, '32).
- 2 *Thornycroft:* ***Daring*** (Apl. 7, '32), ***Decoy*** (June 7, '32).
- 2 *Fairfield:* ***Dainty*** ( ), ***Delight*** ( ).
- 2 *Palmers:* ***Diana*** (June 16, '32), ***Duchess*** (July 19, '32).

Details as "C" class.

DELIGHT 1932 *Photo, Cribb.*

8 "E" class

Programme 1931
- 2 *Denny.* ***Echo. Eclipse.***
- 2 *Scotts.* ***Escapade. Escort.***
- 2 *Swan-Hunter.* ***Esk. Express.***
- 2 *Hawthorne Leslie.* ***Electra. Encounter.***

8 "F" class

Programme 1932
- 2 *Cammell Laird.* ***Fearless. Foresight.***
- 2 *Brown.* ***Foxhound. Fortune.***
- 2 *White.* ***Forester. Fury.***
- 2 *Vickers.* ***Fame. Firedrake.***

4 "C" class

CRESCENT. 1932 *Photo, R. Perkins, Esq.*

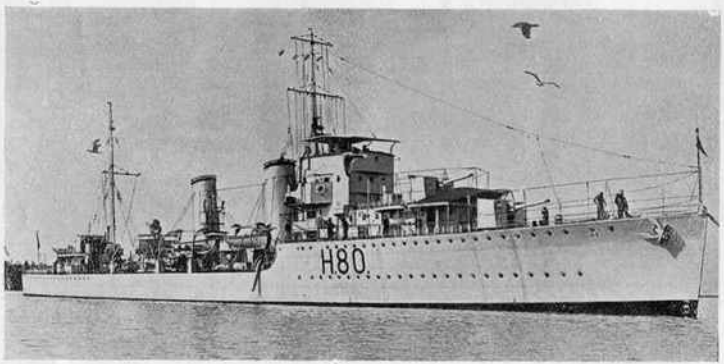
COMET. 1932 *Photo, R. Perkins, Esq.*

Programme 1929
- 2 *Portsmouth D.Y.:* ***Crusader*** (Sept., '31), ***Comet*** (Sept., '31).
- 2 *Vickers-Armstrong:* ***Cygnet*** (Sept. 29, '31), ***Crescent*** (Sept. 29, '31).

General Notes.—Are similar to *Beagle* class from which they differ only in detail.

Displacement: 1,375 tons.
Guns: 4—4·7"
1—3" AA.
5 smaller.
H.P. 36,000 = 35·5 kts.
Dims.: 317½ × 33 × 8½ ft.
Tubes: 8—21"

8 "B" Type (Beagle class).



BRAZEN. 1931 *Photos, R. Perkins, Esq.*

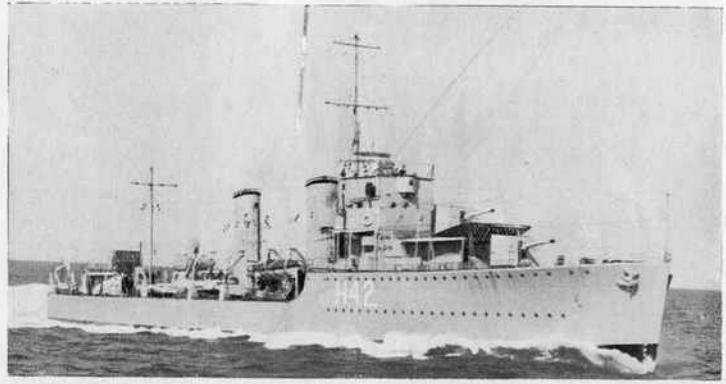
Programme 1928

- 2 *Clydebank*: ***Basilisk*** ( ), ***Beagle*** (Sept. 26, 1930).
- 2 *Hawthorn*: ***Blanche*** ( ), ***Boadicea*** (Sept. 23rd, 1930).
- 2 *Palmers*: ***Boreas*** (July 18th, 1930), ***Brazen*** (July 25th, 1930).
- 2 *Swan Hunter*: ***Brilliant*** (Oct. 9th, 1930), ***Bulldog*** (Dec., 1930).

Displacement, 1360 tons.

General Notes.—Are similar to *Acasta* class from which they differ only in minor details.

8 Modified "A" Type (Acasta class).



ARROW (now has tall mainmast). 1930 *Photo, favour of Messrs. Vickers-Armstrong.*

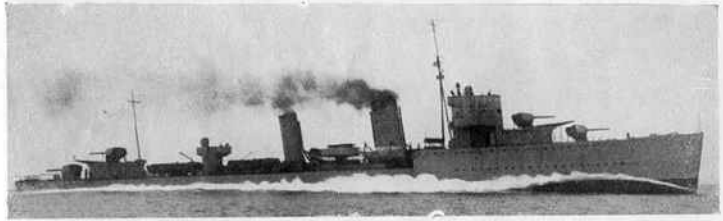
ACHERON. 1931 *Photo, Cribb.*

2 *Clydebank*: ***Acasta*** (Aug. 7th, 1929). ***Achates*** (Oct. 4th, 1929).
1 *Thornycroft*: ***Acheron*** (Mar. 18, 1930).
2 *Hawthorn Leslie*: ***Active*** (July 9th, 1929), ***Antelope*** (July 27th, 1929).
2 *Scotts*: ***Anthony*** (April 24th, 1929), ***Ardent*** (June 26th, 1929).
1 *Vickers-Armstrong*: ***Arrow*** (Aug. 22nd, 1929).

Displacement: 1350 tons. Dimensions: 312 (*p.p.*) 323 (*o.a.*) × 32½ × 12 feet. Guns: **4**—4.7 inch, **2**—2 pdr. pom-pom, **5** M.G. Tubes: **8**—21 inch on quadruple mounts. Machinery: Single reduction geared turbines. 2 screws. Designed S.H.P. 34,000=35 kts. Boilers: 3 Yarrow (working pressure 300 lbs.) with superheaters. Oil fuel: 380 tons. Complement 138.

General Notes.—All laid down 1928, under 1927-28 Estimates. Completed 1930. A very successful class, all having exceeded designed speed with ease. Thus *Arrow* maintained 36.7 kts. with 34,119 H.P. for 6 hours, full power figures being those recorded at boiler capacity for this period. No short period spurts were included in the trials. *Acheron* is fitted with special 500 lb. pressure boilers. All have proved economical steamers, averaging ·81 lbs. (*Acheron* ·608 lbs.) fuel per S.H.P. per hour.

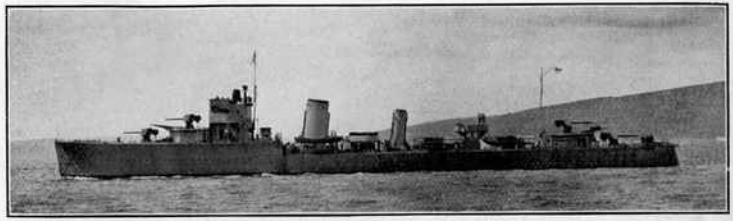
AMAZON.



AMAZON. 1927 *Photo, Messrs. Thornycroft (Builders).*

1 *Thornycroft*: **Amazon** (Jan. 27th, 1926). Displacement: 1352 tons. Dimensions: 311¾ × 31½ × 9 1/2 feet (*mean* draught).
1 *Yarrow*: **Ambuscade** (Jan. 15th, 1926). Displacement: 1173 tons. Dimensions: 307 × 31 × 8¾ feet (*mean* draught).

2 "A Type.



AMBUSCADE. 1926 *Photo, Messrs. Yarrow (Builders).*

Guns: **4**—4.7 inch, **2**—2 pdr. pom-poms, 5 M.G. Tubes: **6**—21 inch. in triple mounts. Machinery: Brown-Curtis turbines (all-geared type) H.P. and cruising; Parsons L.P. Boilers: By Builders. Designed S.H.P. 39,500 (*Amazon*), 33,000 (*Ambuscade*)=37 kts. (made on trials). Superheated steam. Oil: *Amazon*, 433 tons; *Ambuscade*, 385 tons. Complement: 138.

Notes.—Built under 1924-25 Estimates. All-steel bridges, higher freeboard and improved cabin accommodation are principal features of this type, which has a larger radius of action than preceding classes. If necessary, induced ventilation can be supplied throughout the vessel, with a view to possible service in Tropics. *Ambuscade* laid down December 8th, 1924; *Amazon* in January, 1925. Both completed Sept., 1926. Cost: *Amazon*, £319,455; *Ambuscade*, £326,616.

VETERAN. 1930 *Photo, Abrahams, Devonport.*

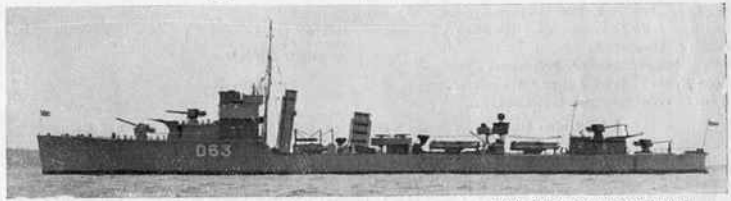
7 BOATS, APPEARANCE AS ABOVE PHOTO:—

1 *Clydebank*: **Veteran.** 2 *Swan-Hunter*: **Whitshed, Wild Swan.**
4 *White*: **Witherington, Wivern, Wolverine, Worcester.**† (Completed by †Portsmouth D.Y.)

To distinguish.—Proportions of funnels reversed compared with other V's and W's. These boats have *thick* fore funnel and *thin* after funnel. *No* AA. guns abaft 2nd funnel. 2 pdr. pom-poms in echelon between funnels. White boats have plain S.L. tower without compass platform on fore side. *Witherington* and *Wivern*, only, have oval afterfunnel, built in sideways.

WOLVERINE

14 "Admiralty Modified W."



VERITY. 1920 *Photo, Seward, Weymouth.*

7 BOATS, APPEARANCE AS ABOVE PHOTO:—

1 *Beardmore*: **Vansittart.** 2 *Clydebank*: **Venomous** (ex *Venom*), **Verity.** 1 *Denny*: **Volunteer.**
1 *Fairfield*: **Wanderer.** 1 *Swan Hunter*: **Whitehall.** (Completed by Chatham D.Y.)
1 *Yarrow*: **Wren.** (Completed by Pembroke D.Y.)

To distinguish.—Difficult to distinguish from six tube V's. The short mainmast separates them from Admiralty W's. Only distinctive feature is the 2—2 pdr. AA. guns abaft after funnel, in echelon. *Vansittart*, *Wanderer*, have plain S.L. towers without compass platform on fore side. *Wren* has no caged caps to funnels and no compass platform forward of S.L. tower. *Volunteer* and *Whitehall*, no compass platform before S.L. tower.

WANDERER.

General Notes for both Types.

	Begun.	Launch.	Comp.
Veteran	30/8/18	26/4/19	13/11/19
Whitshed	6/18	31/1/19	11/7/19
Wild Swan ..	7/18	17/5/19	14/11/19
Witherington ..	27/9/18	16/1/19	10/10/19
Wivern	19/8/18	16/4/19	23/12/19
Wolverine	8/10/18	17/7/19	27/7/20
Worcester	20/12/18	24/10/19	20/9/22

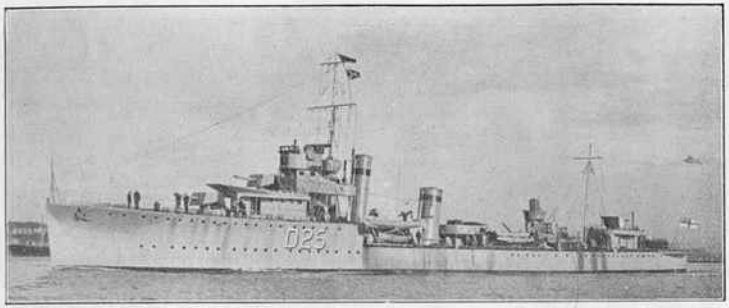
Displacement: 1120 tons *average* (1500 *full load*). Dimensions: 300 (*p.p.*), 312 (*o.a.*) × 29½ × 10¼ feet (*mean*) *draught*. Guns: 4—4·7 inch (DIR. CON.), 2—2 pdr. pom-poms, 1 M.G., 4 Lewis. Tubes: 6—21 inch, in two triple mountings. Machinery: Turbines (all-geared type)—all Brown-Curtis, but *Whitehall*, Parsons. Designed S.H.P. 27,000 = 34 kts.* 2 screws. Boilers: Yarrow, except *White* boats with White-Forster. Oil: 374-353/324-318 tons; *Whitehall*, 368/318. Complement, 134.

*Light load draught on *trials*; on deep load 31 kts. with same S.H.P.

Notes.—Begun under War Emergency Programme, 1918, cost of completion of all comes under post-war Estimates. Differ from preceding V's in armament.

	Begun.	Launch.	Comp.
Vansittart	1/7/18	17/4/19	5/11/19
Venomous	31/5/18	21/12/18	6/19
Verity	17/5/18	19/3/19	17/9/19
Volunteer	16/4/18	17/4/19	7/11/19
Wanderer	1918	1/5/19	18/9/19
Whitehall	6/18	11/9/19	9/7/24
Wren	6/18	11/11/19	2/23

17 Admiralty "W"



WARWICK. 1924 *Photo, Abrahams.*

2 *Beardmore:* **Wakeful, Watchman.***
2 *Denny:* **Walker,* Westcott.**
2 *Doxford:* **Walpole, Whitley.**
2 *Fairfield:* **Walrus, Wolfhound.**
2 *Hawthorn Leslie:* **Warwick,* Wessex.**
1 *Palmer:* **Wryneck.**
2 *Scott:* **Westminster, Windsor.**
2 *Swan Hunter:* **Whirlwind,* Wrestler.**
2 *White:* **Winchester, Winchelsea.**

Note.—Vanquisher and *Venturous*, though officially included in Admiralty "V" class on following page, are actually almost indistinguishable from Admiralty "W" type.

* Fitted as Mine Layers during War, but not so used now. Still have chutes at stern.

Displacement: 1100 tons. Dimensions: 300 (*p.p.*), 312 (*o.a.*) × 29½ × 10 ft. 10 ins. (*mean*), 11¼ (*max.*) draught. Guns: 4—4 inch (Mk. V DIR. CON.), 2—2 pdr. pom-poms, 4 M.G., 4 Lewis. Torpedo tubes: 6—21 inch in two triple deck mountings. Machinery: "All-Geared" turbines, Brown-Curtis in all except Palmer boats with Parsons. 2 screws. Designed S.H.P. 27,000=34 kts.* Boilers: 3 Yarrow, except White boats with White-Forster Oil: *abou* 368/322 tons. Complement, 134.

* Light load draught on *trials*; on deep load at 1480 tons, 31 kts, with same S.H.P.

General Notes.—All Emergency War Programme. The Notes to the Admiralty V's also apply to these boats. No War Losses. *Waterhen* and *Voyager* transferred to R.A.N.

To distinguish.—From Improved W's: 3 inch AA. gun in bandstand abaft 2nd funnel; from V's with 6 tubes: by higher mainmast; from *Vampire*: by shorter foremast no extension to S.L. platform for standard compass, after mast stands away from after superstructure and is tall.

	Begun	Launch.	Comp.
Wakeful ..	17/1/17	6/10/17	11/17
Watchman ..	17/1/17	2/12/17	1/18
Walker ..	26/3/17	29/11/17	12/2/18
Westcott ..	30/3/17	14/2/18	12/4/18
Walpole ..	5/17	12/2/18	7/8/18
Whitley ..	6/17	13/4/18	10/18
Walrus ..	2/17	27/12/17	8/3/18
Wolfhound ..	4/17	14/3/18	27/4/18
Warwick ..	10/3/17	28/12/17	18/3/18
Wessex ..	23/5/17	12/3/18	11/5/18
Wryneck ..	7/17	13/5/18	11/18
Westminster ..	4/17	24/2/18	18/4/18
Windsor ..	4/17	21/6/18	28/8/18
Whirlwind ..	5/17	15/12/17	3/18
Wrestler ..	7/17	25/2/18	15/5/18
Winchester ..	12/6/17	1/2/18	29/4/18
Winchelsea ..	24/5/17	15/12/17	15/3/18

(Plans as for "6 tube V's" *Vanessa, Vanity*, &c., on next page.)

2 Thornycroft "W"

WOOLSTON 1931 *Photo, R. Perkins, Esq.*

2 *Thornycroft:* **Wolsey, Woolston.** 1120 tons. Dimensions: 300 (*p.p.*), 312 (*o.a.*) × 30ft. 7in. × 10¼ feet (*mean* draught). Guns: 4—4 inch (Mk. V. DIR. CON.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Tubes: 6—21 inch in two triple deck mountings. Machinery: Brown-Curtis turbines (all-geared type). 2 screws. Designed S.H.P. 30,000 = 35 kts.* Thornycroft boilers. Oil: 374/322 tons. Complement, 134.

* Light load draught on *trials*; on deep load at 1512 tons, 31 kts. with same S.H.P.

General Notes.—Emergency War Programme. Differ from other Admiralty W's in H.P., speed, and a few other particulars. No War Losses. Plans as "6-tube V's" on next page.

To distinguish.—Big flat-sided after funnel. Fore funnel does not look so prominently raised, owing to extra height of after funnel. Hulls stand high out of water.

	Begun.	Launch.	Comp.	Trials.
Wolsey	3/17	16/3/18	14/5/18	36.64
Woolston	4/17	27/1/18	28/6/18	37.11

2 Thornycroft "Modified W" Type.

WISHART. 1921 *Photo, Hopkins, Southsea.*

2 *Thornycroft:* **Wishart, Witch.** 1140 tons (1550 *full load*). Dimensions: 300 (*p.p.*), 312 (*o.a.*) × 30 ft. 7 in. × 10 feet. 11 ins Guns: 4—4.7 inch (DIR. CON.), 2—2 pdr. pom-poms, 1 M.G., 4 Lewis. Torpedo tubes: 6—21 inch in two triples. Machinery: Brown-Curtis turbines (all-geared type). 2 screws. Boilers: 3 Thornycroft. Designed S.H.P. 30,000 = 35 kts. (light load draught on *trials*) and 32 kts. (deep load). Oil fuel: 374/322 tons. Complement, 134.

General Notes.—Begun under Emergency War Programme. Differ from Admiralty "Modified W's" in dimensions, H.P., speed and a few other details.

To distinguish.—Big, flat-sided fore funnel, set well aft of bridges, both funnels nearly equal in height. High mainmast. These T.B.D. stand high out of water.

	Begun.	Launch.	Comp.
Wishart ..	6/18	18/7/19	6/20
Witch ..	6/18	11/11/19	3/24†

†*Witch* completed by Devonport D.Y.

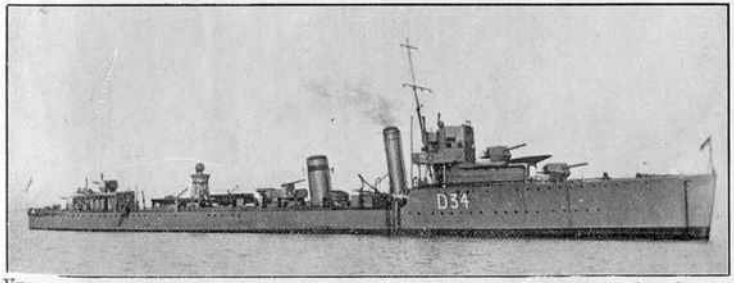
(Plans generally as for *Wolverine* on preceding page.)

22 Admiralty "V."

VIVACIOUS. 1922 *Photo, Gieves, Ltd.*

2 *Beardmore :* ***Vanessa, Vanity.***
1 *Doxford :* ***Vega.***
1 *Fairfield :* ***Venetia.***
1 *Hawthorn Leslie :* ***Verdun.***
2 *Stephen :* ***Vidette, Vesper.***
2 *Swan Hunter :* ***Violent, Vimiera.***
1 *White :* ***Vectis.***
2 *Yarrow :* ***Vivien, Vivacious.***
3 *Denny :* ***Valorous, Valkyrie, Venturous.***
1 *Clydebank :* ***Vanquisher.***
1 *Cammell-Laird :* ***Valentine.***

All above boats have **6**—21 inch tubes in 2 triple deck mountings (1920 alteration).
To distinguish.—Identical now with "Admiralty W." boats, but have *short* mainmasts (except *Vanquisher, Venturous, Valorous*, which have *high* mainmast, like "W" class, from which they are practically indistinguishable in appearance).
Vendetta and *Vampire* transferred to R.A.N.



VELOX. 1925 *Photo, Abrahams, Devonport.*

1 *Beardmore :* ***Vimy*** *(ex Vancouver*
1 *Doxford :* ***Velox.****
1 *Hawthorn Leslie :* ***Versatile.****
1 *White :* ***Vortigern.****

All above have *five* 21 inch tubes in one triple (forward) and one double (after) deck mountings (1920 alteration). All fitted as Mine Layers during War, but not so used; some retain chutes at stern. Otherwise as General Notes.
To distinguish.—The mixed T.T. mountings are special to these boats, and render them distinctive.

VANOC (note position of polemast). 1932 *Photo, R. Perkins, Esq.*

1 *Clydebank :* ***Vanoc.***

All excepting *Vanoc* are now fitted with triple tubes.

Vanoc has 3 Tubes only.

Special Note.—Vampire, Valorous, Valkyrie, Valentine, are fitted as Flotilla Leaders, having been originally designed and classed as such. Internal arrangements of these differ from rest of class.

General Notes.

Displacements: 1090 tons (1300 tons normal Leaders being 1325 *normal*). (1480 *deep load*). Dimensions: 300 (*p.p.*), 312 (*o.a.*) × about 29½ × 10 ft. 10 in. (*mean*), 11¼ (*max.*) draught. Guns: **4**—4 inch (Mk. V. DIR. CON.), **1**—2 pdr. pom-pom. **1** M.G., **4** Lewis. Torpedo tubes: As noted above. Machinery: "All-Geared" turbines: Brown-Curtis in all, except Doxford, Swan-Hunter and Laird boats with Parsons. 2 screws. Designed S.H.P. 27,000 = 34 kts. (light load draught on *trials*) = 31 kts. (deep load draught). Boilers: 3 Yarrow in all, except White boats with White-Forster. Weight of machinery: 425 tons. Oil: 360/320 tons. Feed water: 20 tons+7 for drinking. Complement, 134. *Trials: Vivacious* 33.01, *Vivien* 36.79.

All Emergency War Programme.

	Begun.	Launch.	Comp.
Vimy ..	15/3/17	28/12/17	9/3/18
Vanessa ..	16/5/17	16/3/18	27/4/18
Vanity ..	28/7/17	3/5/18	21/6/18
Vanoc ..	20/9/16	14/6/17	8/17
Vanquisher ..	27/9/16	18/8/17	10/17
Venturous ..	9/10/16	21/9/17	20/11/17
Vega	1916	1/9/17	12/17
Velox	1/17	17/11/17	1/4/18
Valentine ..	7/8/16	24/3/17	27/6/17
Valkyrie ..	25/5/16	13/3/17	16/6/17
Valorous ..	25/5/16	8/5/17	21/8/17
Venetia	1917	29/10/17	19/12/17
Verdun ..	13/1/17	21/8/17	3/11/17

	Begun.	Launch.	Comp.
Versatile ..	31/1/17	31/10/17	11/2/18
Vesper ..	27/12/16	15/12/17	20/2/18
Vidette ..	1/2/17	28/2/18	27/4/18
Violent ..	11/16	1/9/17	11/17
Vimiera ..	10/16	22/6/17	10/17
Vectis	7/12/16	4/9/17	5/12/17
Vortigern ..	17/1/16	15/10/17	25/1/18
Vivacious ..	7/16	3/11/17	12/17
Vivien] ..	7/16	16/2/18	28/5/18

War Losses.—Vehement (Denny). *Verulam* (Hawthorn Leslie) and *Vittoria* (Swan Hunter) lost 1919 in Baltic operations. *Valkyrie* mined during war and had to be almost entirely rebuilt at Chatham D.Y. Valhalla scrapped 1932.

Minelayers:—Vimy, Velox, Versatile, Vortigern, Walker, Warwick, Watchman, Whirlwind, and Vanoc, retain minelaying gear. Carry 20 mines.

24 Admiralty "S."

5 *Clydebank:* ***Scimitar, Scotsman, Scout, Seafire, Searcher.***

3 *Denny:* ***Senator, Seraph, Serene.***

2 *Doxford:* ***Shamrock, Shikari.****

1 *Fairfield:* ***Spindrift.***

4 *Hawthorn Leslie:* ***Tenedos, Thanet, Thracian,† Turbulent.***

3 *Scott:* ***Stronghold, Sturdy, Swallow.***

3 *Stephen:* ***Sabre, Saladin, Sardonyx.***

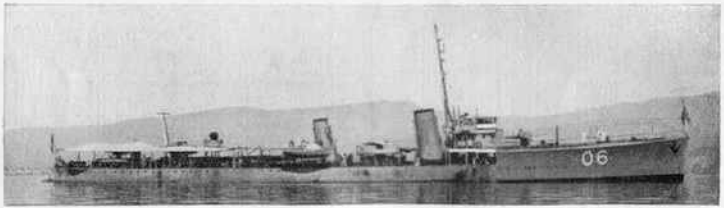
1 *Swan Hunter:* ***Sportive.***

2 *White:* ***Trojan, Trusty.***

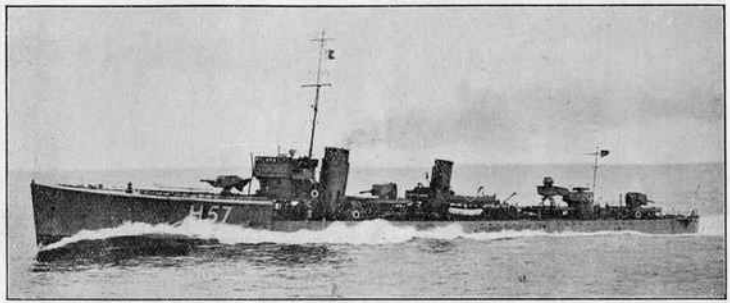
*Completed by Chatham D.Y. 1924 and †by Sheerness D.Y. 1922. Rest completed 1918-19.

905 tons. Dimensions: 265 (*p.p.*), 276 (*o.a.*) × 26¾ × 10¾ feet (*mean*) draught. Guns: **3**—4 inch (Mk. IV Dir. Cox. with 30° elevation), **1**—2 pdr. pom-pom, **1** M.G., **4** Lewis. Tubes: **4**—21 inch in pairs.* (*See Notes.*) Machinery: Turbines (all-geared type). Brown-Curtis (A.G.) in all except following:—Palmer boats, Parsons (A.G.); *Tilbury, Tintagel*, Parsons (A.G.). Designed S.H.P. 27,000 = 36 kts. 2 screws. 3 Yarrow boilers in all, except White boats with White-Forster. Oil: 301·254 tons. Complement, 98.

General Notes.—Emergency War Programme boats, but cost of completion of about 45 boats included in post-war Estimates. Design derived from "Admiralty Modified R" boats. Reported to be not quite so successful as the Admiralty R's. They are wet with sea on beam or bow; they ride well in head seas, but throw spray over bridges. No War losses. *Speedy* and *Tobago* lost 1922. *Saturn, Sycamore*, (both Stephen) cancelled. *Stalwart, Success, Swordsman, Tattoo, Tasmania*, presented to Royal Australian Navy, 1918. *Stonehenge* wrecked, 1920. *Sikh* and *Spear* sold. *Tactician, Seabear, Simoon, Shark, Sparrowhawk, Splendid, Tilbury* sold 1930. *Trinidad, Tintagel, Seawolf, Scythe, Tara, Truant* sold 1931. *Sepoy, Sterling, Serapis, Somme*, sold 1932. *Sesame, Sirdar, Stormcloud, Steadfast, Strenuous, Tribune, sold* 1933.
Shikari has had W/T. deckhouse erected in place of gun between funnels and carries a much reduced armament.

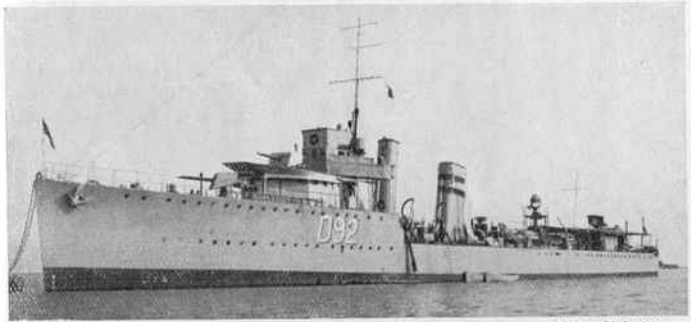


TILBURY. 1920 *Photo, J. Spartali, Esq., Smyrna.*



SPINDRIFT. 1924 *Photo, Abrahams.*

2 Thornycroft "V."



VISCOUNT. *Photo added* 1923.

2 *Thornycroft:* ***Viceroy,†*** ***Viscount.*** 1120 tons. Dimensions: 300 (*p.p.*), 312 (*o.a.*) × 30′ 7″ × 10¾ feet (*mean*) 11¼ feet (*max.*) draught. Guns: 4—4 inch (Mk. V Dir. Cox.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Tubes: 6—21 inch in 2 triple deck mountings. Machinery: Brown-Curtis (all-geared) turbines. 2 screws. Designed S.H.P. 30,000 = 35 kts.* Boilers: 3 Thornycroft. Oil fuel: 374/322 tons. Complement, 134.

* Light load draught on *trials*: on deep load at 1512 tons, 31 kts. with same S.H.P.

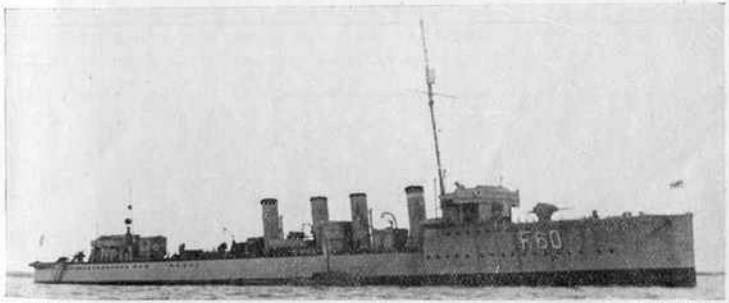
General Notes.—Emergency War Programme boats. Differ from Admiralty V design in dimensions, H.P. and speed. No War Losses.

To distinguish.—As Notes to *Wolsey* and *Woolston*, except in height of mainmast, which is *short*, in these two boats.

	Begun.	*Launch.*	*Comp.*	*Trials.*
Viscount	12/16	29/12/17	3/18	37.60
Viceroy	12/16	17/11/17	1/18	36.5

(Plans as "6 tube V's" on preceding page.) † H.S. Sweeps.

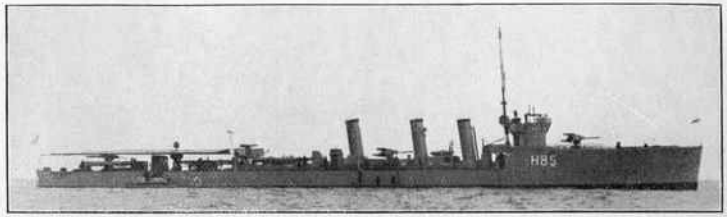
Minelayer.



ABDIEL. 1922 *Photo.*

1 *Cammell-Laird:* ***Abdiel.*** 1670 tons. Dimensions, H.P., speed, as other 2 ships of this class above. Parsons turbines. Armament: 3—4 in., 1—2 pdr. 1 M.G., 4 Lewis. Tubes: none. This boat is a mine-layer carrying about 60—70 mines from fourth funnel to stern. Complement, 128. Laid down May, 1915; Launched Oct. 1915. Completed March, 1916.

9 "Admiralty R."



ROWENA. (Note stump W.T. mast.) 1927 *Photo, R. Perkins, Esq.*

3 *Clydebank:* ***Restless, Rowena, Skate.***

1 *Fairfield:* ***Tempest.***

2 *Harland & Wolff (Govan):* ***Salmon, Tetrarch.***

2 *Hawthorn Leslie:* ***Thisbe, Thruster.***

1 *Swan Hunter:* ***Torrid.***

Displacement: 900 tons. Length (*p.p.*), 265 feet (*o.a.* varies from 274 to 276 feet). Beam, 26¼ feet. *Mean* draught, 10½ feet. *Max.* draughts, 11¼ to 15 feet. Guns: 3—4 inch (Dir. Cox.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. Torpedo tubes: 4—21 inch in pairs. Machinery: Turbines—"all-geared" types. Clydebank, Fairfield, Harland & Wolff, Swan Hunter boats, Brown-Curtis A.G. turbines; Hawthorn Leslie boats, Parsons A.G. turbines. Designed S.H.P. 27,000 = 36 kts. 2 screws in all. Boilers: 3 Yarrow or Modified Yarrow. Oil fuel: 301-285/258-243 tons. Complement, 98.

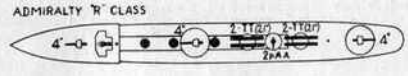
Appearance Notes.—*Skate, Restless,* mainmast for Poulsen W/T. *Salmon* has S.L. platform just abaft after funnel. *Rowena* has very short mainmast stepped abaft pom-pom platform and no after control. *Thisbe, Thruster* have no funnel caps. *Torrid* has had her forward 4 inch gun removed; *Tetrarch* her after one, together with its platform. *Restless* has had tubes removed temporarily.

General Notes.—All Emergency War Programme boats. In Reserve or attached to Training Establishments. *Tetrarch* fitted for target towing, with towing winch in place of after 4 inch.

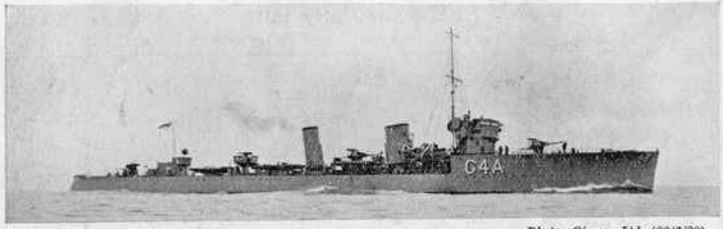
Engineering Notes.—Propeller revolutions, 350; about 3,000 R.P.M. in H.P., and 2,300 R.P.M. in L.P. Each set of turbines = one H.P. and one L.P. driving common gear wheel on propeller shaft. Cruising turbine replaced by extra stage in H.P. turbine which is by-passed at full speed, an arrangement which has worked very successfully. Boiler pressure, 250 lbs. per sq. in. Furnaces = 24,700 sq. ft. heating surfaces.

War Losses.—*Simoom* (Clydebank), *Recruit* (Doxford), *Tornado* (Stephen), *Torrent* (Swan Hunter), *Setter* (White).

Sold.—*Rigorous, Rob Roy, Rocket, Redoubt, Skilful, Springbok, Sylph, Sarpedon, Sceptre, Sturgeon, Satyr, Sharpshooter, Tarpon, Telemachus, Redgauntlet, Stork, Radstock, Raider, Sorceress, Sable, Tancred, Tenacious, Starfish, Romola, Tormentor*



1 Yarrow "R." ("Later M.")



Photo, Gieves, Ltd. (22/6/20).

1 *Yarrow:* ***Tyrant.*** Displacement: 760 tons. Dimensions: 269½ (*p.p.*), 271½ (*o.a.*) × 25¾ × 9 ft. 7 in. (*mean*), 10¼ (*max.*) draught. Guns: **3**—4 inch (DIR. CON.), **1**—2 pdr. pom-pom, **1** M.G., **4** Lewis. Torpedo tubes: **4**—21 inch, in pairs. Machinery: Brown-Curtis turbines, 2 screws. Designed S.H.P. 23,000 = 36 kts. Boilers: 3 Yarrow. Oil fuel: 256-228/215-202 tons. Complement, 98.

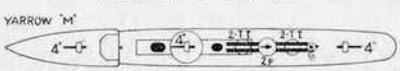
General Notes.—Emergency War Programme. Has no geared turbines, nor is the after 4 inch in a handstand. Accordingly, though officially styled "Yarrow R." more correctly and usually referred to as "Later M" type. *Relentless, Rival, Sybille, Sabrina* and *Truculent* disposed of 1926. *Tyrant* has had guns and tubes removed while attached to *Fingard* training establishment.

War Losses.—Strongbow, Surprise, Ulleswater (all Yarrow).

	Begun.	*Launch.*	*Comp.*	*Trials.**
Tyrant	3/16	19/5/17	7/17	37.37

*Displacement on *trial*, 1050 tons.

YARROW "M"



3 P-Boats (Patrol Boats).

(All have foretopmast now.) 1919 *Photo, Robertson, Gourock.*

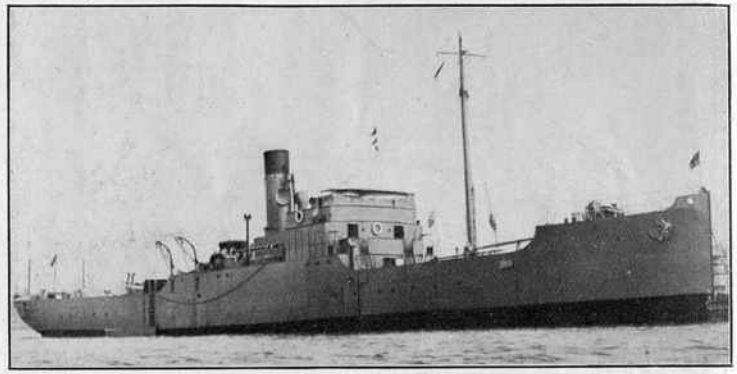
1 *Hamilton:* ***Spey*** (*ex P.35*) (1917).

2 *White (Cowes):* ***P.40,*** (1916), ***P.59*** (1917).

Displacement: 613 tons. Dimensions: 230 (*p.p.*), 244½ (*o.a.*) × 23¾ × 7 feet 11 inches. Guns: Designed to mount 2—4 inch but guns mounted are 1—4 inch and 1—2 pdr. pom-pom. Tubes: Originally **2** single 14 inch, removed from old Torpedo Boats and fixed on quarters, but removed from nearly all boats and replaced by rails and 30 D.C. Machinery: Brown-Curtis or Parsons geared turbines, 2 screws. Yarrow boilers (White-Forster in *White* boats). Designed S.H.P. 3500 = 20 kts. Oil fuel: *normal* 50 tons, *max.* 93 tons. Complement, 56.

General Notes.—All built under Emergency War Programme. Were designed to relieve destroyers of patrol and escort work and submarine hunting. Outline scheme for these boats stipulated; minimum size consistent with sea-keeping qualities, simplicity of construction, and adequate speed to run down submarines; also shallow draught; low upperworks to reduce visibility; and economy of fuel. Built of mild steel, but with hard steel stem for ramming submarines. Large rudder area and hull strongly cut up aft to give rapid turning. Proved very useful boats and an excellent anti-submarine type in all weathers. Could do 23 kts. when new. *Spey* so named when selected for Fishery Protection Duty, 1924.

2 P.C. Boats (Converted Patrol Boats).



DART. 1926 *Photo, Abrahams & Sons, Devonport.*

2 *White:* ***P.C. 74*** (1918). ***Dart*** (*ex P.C. 73*) (1918).

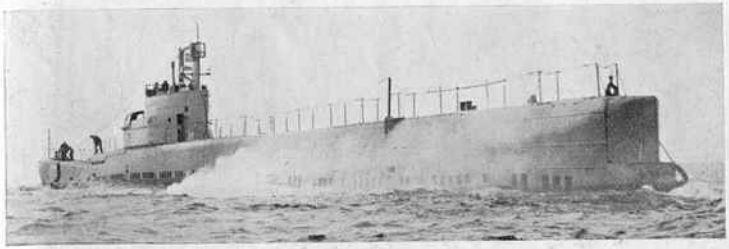
Dimensions: 694 tons: 233 (*p.p.*), 247 (*o.a.*) × 26½ × 8 feet. Guns: **1**—4 inch, **2**—12 pdr. Torpedo tubes: removed. Carry 24-30 D.C. Machinery: Parsons or Brown-Curtis geared turbines. Boilers: White-Forster. 2 screws. Designed S.H.P. 3,500 = 20 kts. Oil: 164 tons *max.* Complement, 56.

General Notes.—Built under Emergency War Programme. Design as P-boats, but converted or modified while building, to act as Submarine Decoy Vessel or "Q-boat." The after 4 inch gun was hidden behind various forms of dummy deck loads, *e.g.*, bales or packing cases of merchandise, trusses of hay; in a few boats it was located within a collapsible pantechnicon furniture van, or under a dummy boat built in folding sections. The 12 pdr. were behind lidded ports to port and starboard of chart house. It was expected that, on account of shallow draught, torpedoes fired by U-boats would under-run *P.C.*-boats. *Dart* so named on selection for Fishery Protection Duty, 1925.

SPEY. 1929 *Photo, Cozens & Co., Portsmouth.*

56 (+ 6 *Building*) = **62** **Submarines.**

2 Minelayers.



1932 *Photo, Courtesy of Messrs. Vickers-Armstrong.*

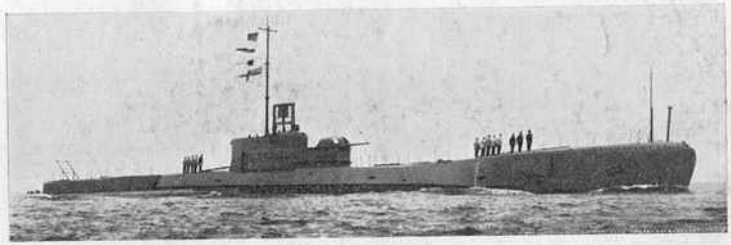
1 *Chatham Dockyard*: **Grampus.**

1 *Vickers-Armstrong*: **Porpoise** (1932). Armament: 1—4·7 inch gun. ? Tubes. ? Mines.

Dimensions 267 × 29·9 × 13·7 feet. Displacement 1500/2060 tons. H.P. 5300/1630 = 15/8¼ kts.

Porpoise laid down under 1930 Estimates, *Grampus* under 1932 Estimates.

3 Thames class.



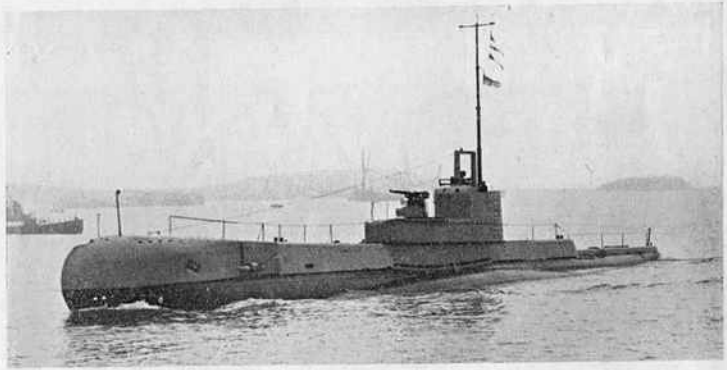
3 *Vickers-Armstrong*: **Thames** (1931), **Severn, Clyde.**

Displacement: 1805/2680 tons. Dimensions: 345 × 28 × 10½ feet.
Armament: 1—4·7", 2 smaller guns, 6—21" Tubes.
Diesels: 10,000 S.H.P. = 21¼ kts. Motors: 2,500 H.P. = 10 kts.
Built under 1929-31-32 Programmes.

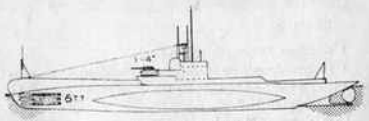
Thames is the first submarine to reach 21 kts with Diesels, her best speed being 22·5 kts. with 10,000 H.P. at 405 revs.

Laid down under 1929, 1931 and 1932 Estimates respectively.

7 Swordfish class.

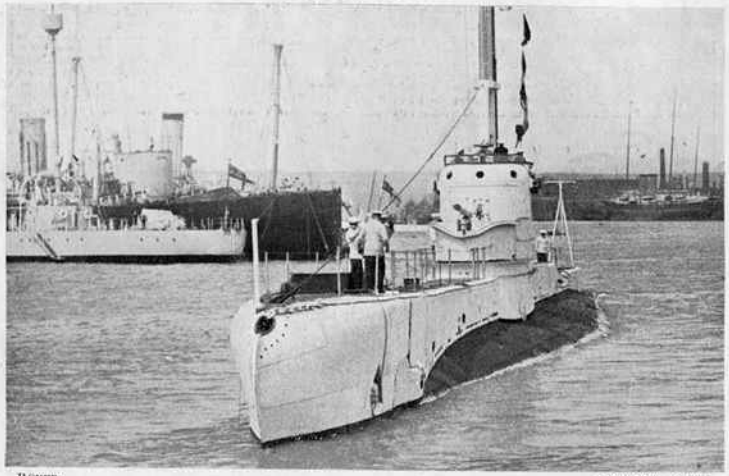


2 *Chatham D.Y.*: **Swordfish** (Nov. 10'31) **Sturgeon** (Jan. 8'32). 1929 Estimates.
2 *Chatham D.Y.*: **Starfish, Seahorse.** 1930 Estimates.
1 *Chatham D.Y.*: **Shark.** 1931 Estimates.
2 *Cammell Laird*: **Sea Lion** (1931 Estimates), **Salmon** (1932 Estimates).
Dimensions: 202½ × 24 × 10½ feet = 640/935 tons.
Armament: 1—3 inch AA. gun. 6—21" Tubes. H.P. 1550/1300 = 13¾/10 kts.

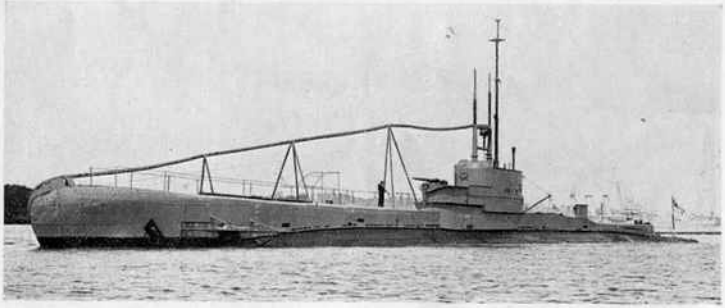


Plan of *Swordfish* class.

4 "R" Type (Rainbow class).



ROVER. 1933 *Photo, Cribb.*



REGULUS. 1931 *Photo, R. Perkins, Esq.*

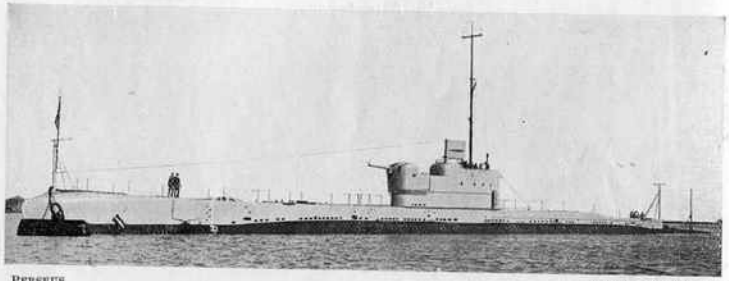
1 *Chatham Dockyard:* ***Rainbow.***

3 *Vickers-Armstrong:* ***Regent, Regulus, Rover*** (June, 1930).

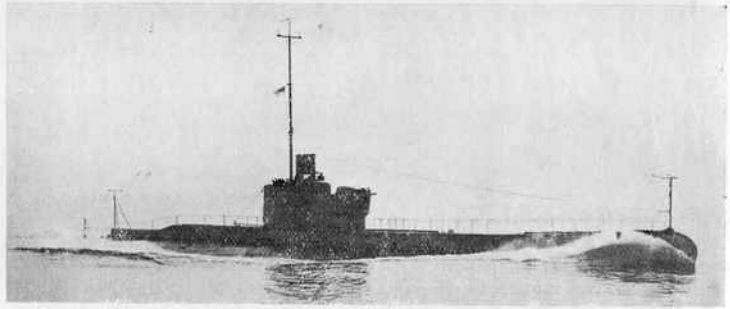
Displacement: 1475/2015 tons. Dimensions: Armament: 1—4" or 4·9" gun, 8—21" tubes (6 bow, 2 stern). Designed H.P.

Laid down 1929 under 1928-29 Estimates: Two more boats *Royalist* (Beardmore) and *Rupert* (Lairds) cancelled in July, 1929.

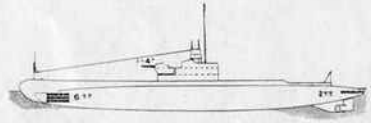
5 "P" Type (Parthian class).



PERSEUS *Photo, R. Perkins, Esq.*



1930 *Photo, Messrs. Vickers-Armstrong.*



1 *Chatham:* ***Parthian*** (June 22nd, 1929).

1 *Cammell Laird:* ***Phœnix*** (Oct. 3rd, 1929).

3 *Vickers-Armstrong:* ***Pandora*** (*ex Python*) (Aug. 22nd, 1929), ***Perseus*** (May 22nd, 1929), ***Proteus*** (July 23rd, 1929).

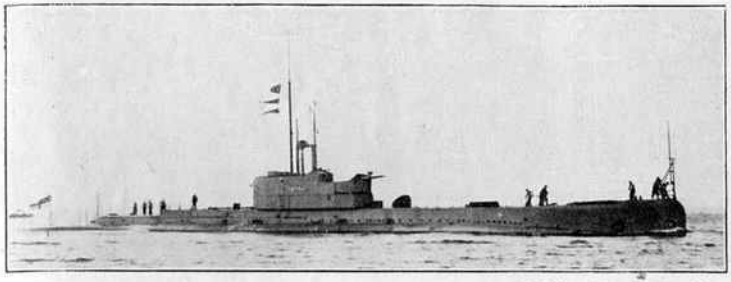
Displacement: 1475/2040 tons. Dimensions: 260×28×13¼ ft. Armament: 1—4 inch gun, 8—21 inch tubes (6 bow, 2 stern). Designed H P. $\frac{4400}{1475} = \frac{17\cdot5}{6}$ kts.

General Notes.—All laid down 1928 under 1927 Estimates. Generally resemble "O" type, with higher surface speed and other improvements. Completed during 1930.

Perseus armed with experimental 4·9" gun which, if satisfactory, may be supplied to other classes.

Poseidon lost in collision June 9th, 1931.

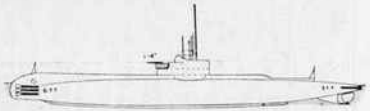
9 "O" Class.

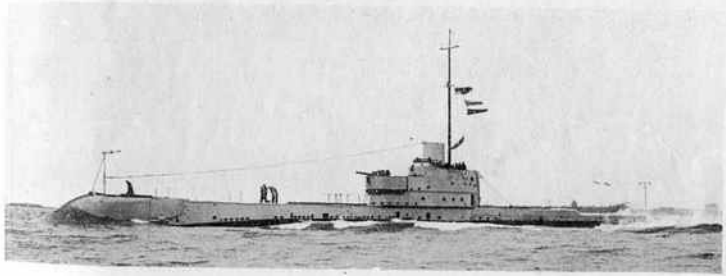


OBERON. 1927 *Photo, Cozens, Portsmouth.*

1 *Chatham Dockyard:* ***Oberon*** **(*Ex O.1.*** Sept. 24th, 1926) Displacement 1311/1805.
Armament: 1—4", 2 smaller, 8—21" tubes (6 bow, 2 stern). H.P. 2950/1350 = 15/9 knots.

2 *Vickers-Armstrong:* ***Oxley*** (ex-*AO* 1, June 30th, 1926), ***Otway*** (ex-*AO* 2, Sept. 7th, 1926). Both completed in 1927. 1354/1835 tons. Guns: 1—4 inch in armoured position. Tubes: 6—21 inch (bow), 2—21 inch stern). H.P. $\frac{3000}{1350}$ = $\frac{15.5}{9\ kts}$
Fuel: 200 tons. Built for the Royal Australian Navy and presented to the British Navy in 1931 as a measure of economy.





OSWALD. 1930 *Photo, Cribb.*

1 *Chatham Dockyard:* ***Odin*** (May 5th, 1928).
2 *Beardmore:* ***Olympus*** (Dec. 11th, 1928), ***Orpheus*** (Feb. 26th, 1929).
3 *Vickers-Armstrong:* ***Osiris*** (May 19th, 1928), ***Oswald*** (June 19th, 1928), ***Otus*** (Aug. 31st, 1928).
Displacement: 1475/2030 tons. Dimensions: 260 × 28 × 13½ feet draught. Armament: 1—4" gun (in armoured position), 8—21" tubes (6 bow, 2 stern). Designed H.P. 1400/1320 = 17·5/9 kts. Oil fuel: 200 tons.

14 "H" Class.

1920 *Photo, Gieves, Ltd.*

H 23 (*H 24—32, H 48—50* same; *H 33, 34*, have flat-topped C.T.; and *H 43, 44* have right angled instead of curved after screen to C.T.)

7 *Vickers:* ***H 23*** (1918) ***H 24*** (1918), ***H 27, H 28, H 30—32*** (all 1918).
2 *Cammell Laird:* ***H 33, H 34*** (both 1918).
3 *Beardmore:* ***H 48, H 49, H 50*** (all 1919).
2 *Armstrong Whitworth:* ***H 43, H 44*** (both 1919).

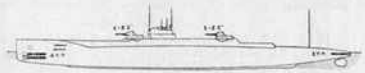
Single-hull "Holland" (Electric Boat Co.) type modified by Admiralty. Displacement, 410/500 tons. Dimensions: 164½ (*p.p.*), 170 (*o.a.*) × 15¾ × 11¼ feet. Tubes: 4—21 inch bow. Machinery: 2 sets of Diesel engines, 8 cylinder, 4-cycle, air injection "H" type, developing 240 B.H.P. at 375 r.p.m., and built by Vickers, North British Diesel Co., Ruston & Hornsby, &c. Oil: 16 tons. D.H.P. 480/320 = 13/10·5 kts.

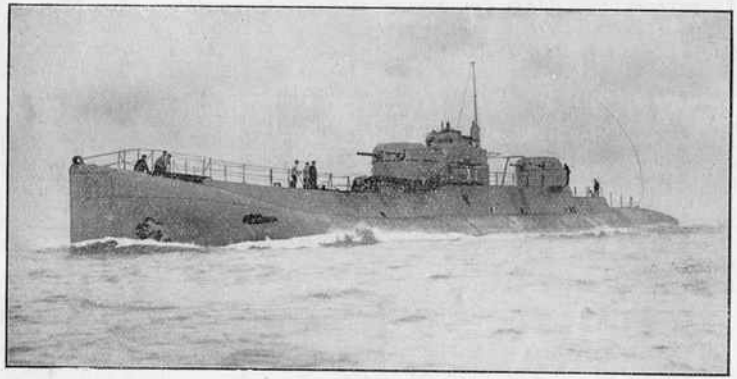
Notes.—All built under War Emergency Programme. Launching dates as above. First boat delivered January, 1918, and *H 44* last, in March, 1920. *H 29* sank in dock at Devonport, August, 1926, and placed on disposal list in consequence. *H 51* on disposal list, 1923; *H 21*, 1924; *H 26, H 52*, 1927; *H 22, H 25*, 1928; *H 42* lost 1922; *H 47* sunk by collision with *L 12*, July, 1929.

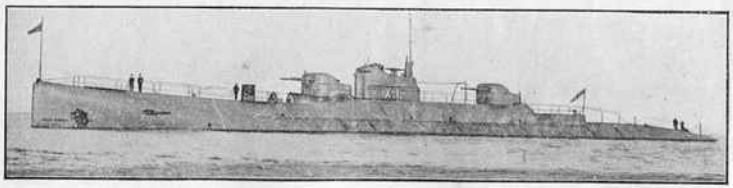
1 Cruiser Type.

X 1 (June 16th, 1923) by Chatham Dockyard, provided under 1921-22 Navy Estimates. Understood that her design embodies various novel features derived from war experience, post war experiments, and trials run with sundry types of surrendered German Submarines. Displacement: standard 2425, *normal* surface 2780 tons; *submerged*, 3600 tons. Dimensions: 350 × 29¾ × 17 feet. Armament: **4**—5.2 inch, **2** M.G., and **6**—21 inch torpedo tubes. Diesel engines of 6000 H.P. = 19.5 kts. Submerged, B.H.P. 2600 = 9 kts. Complement 110. Total cost, £941,794, or with alterations, £1,044,158.

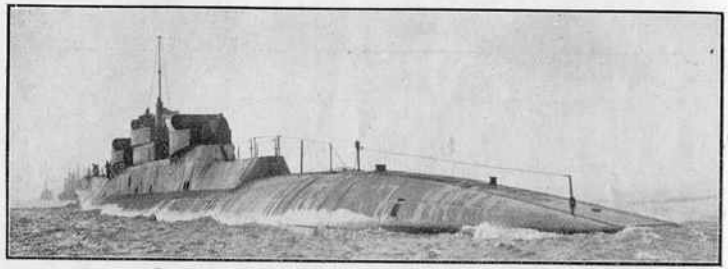
Notes.—It is reported that X 1 is capable of remaining submerged for 2½ days, and that she has an exceptionally small turning circle. Designed for deep diving, and construction is therefore of exceptional strength. Gun positions appear to be armoured. Laid down 1/11/21: first trials run in Jan., 1924. Official commissioning date, 25 Sept., 1925.



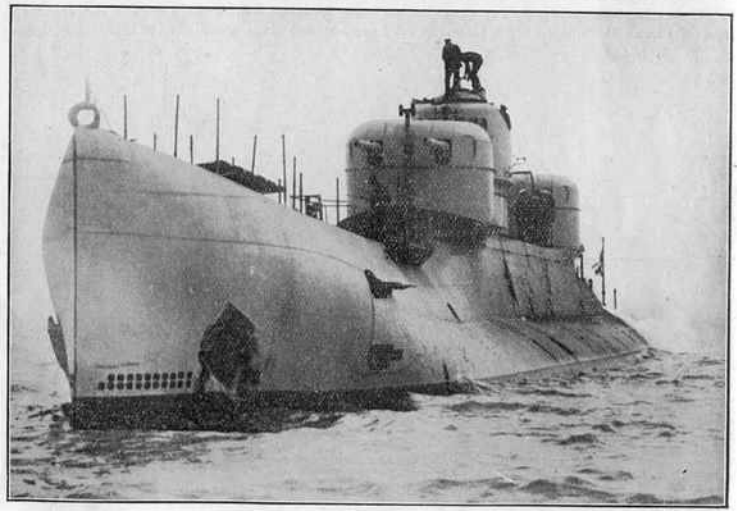




X 1. 1925 *Photos, Cribb, Southsea.*



X 1. 1925 *Photo, Cribb, Southsea.*



X 1. 1926 *Photo, Cribb, Southsea.*

L Class.

(Shape of C.T. varies in these boats.)

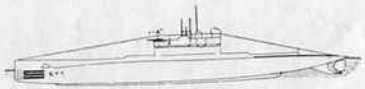
L 52, L 53 as above photo of L 71, which no longer carries an after gun. 1920 *Photo, Gieves, Ltd.*

L 56. Deck before C.T. not raised. 1927 *Photo, Abrahams, Devonport.*

6 L Class. (Third "L" series: "*L 50 Class*".)

(All delivered by November, 1924.)

2 *Armstrong Whitworth:* ***L 52*** (1918), ***L 53**** (1919).
1 *Denny:* ***L 54***† (1919).
1 *Fairfield:* ***L 56*** (1919).
1 *Beardmore:* ***L 69***§ (1918).
1 *Scotts:* ***L 71*** (1919).

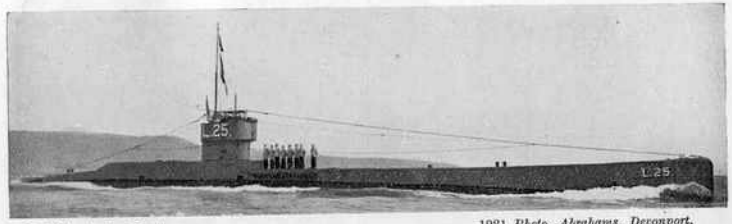


* Completed by Chatham D.Y., 1924.
† Completed by Devonport D.Y., 1924.
§ Completed by Rosyth D.Y., 1923.

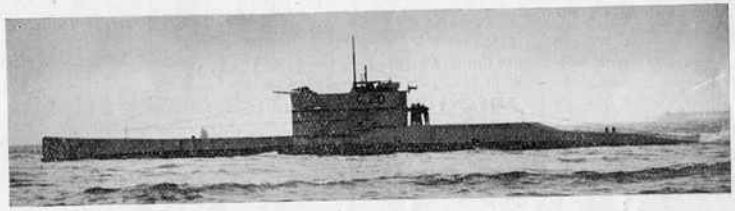
Admiralty saddle-tank type. Displacement: 845/1150 tons. Dimensions: 230½ (*p.p.*), 235 (*o.a.*) × 23½ × 13¼ feet. Guns: **1**—4 inch, **1** M.G. (*L* 52, *L* 53 have **2**—4 inch). Tubes: **6**—21 inch, all in bows. Machinery: 2 sets 12-cylinder solid-injection, Vickers type Diesel engines by Ruston & Hornsby, Willans & Robinson, Bellis & Morcom, Armstrong, Thornycroft. Oil: 78 tons. D.H.P. $\frac{2420}{1655} = \frac{15\cdot5}{15\cdot5}$ kts.

Notes.—All begun under Emergency War Programme, 1917. Equipment as Notes to *L* 9—33 on next page. Can be distinguished by the long C.T. (and two guns in *L* 52, 53). *L* 55 lost in the Baltic.

L Class—*continued.*



L 25 Mine-laying Boat. 1921 *Photo, Abrahams, Devonport.*



L 20. (*L* 18, 21, 22. No step in slope to stern). 1919 *Photo, Cribb, Southsea.*

11 L Class. (Second series).

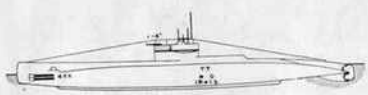
10 *Vickers:* ***L 17, L 18, L 19, L 20, L 21, L 22, L 23*, L 25, L 26*, L 27****, (1918–19).
1 *Fairfield:* ***L 16.*** * Completed by Dockyards.

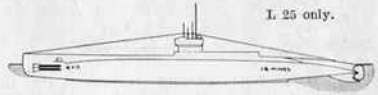
Details as preceding boats.

Armaments: L 16, 18, 21, 22 } = 1—4", 4 T.T.
L 19, 20, 26, 27, 23 }
L 14, 17, 25 = 1 M.G., **4** T.T., **16** mines.

Notes.—All begun under Emergency War Programme, 1916. Equipment of these boats is extensive, e.g., refrigerating machinery for storage batteries, gyro compass with repeaters, 3 periscopes (one for night work), directional hydrophones, &c. Breastwork revolves with gun. *L* 10 War loss. *L* 24 rammed off Portland, January, 1924. *L* 9 foundered in a typhoon at Hong Kong, August, 1923, but was salved the following month; since placed on Disposal List.

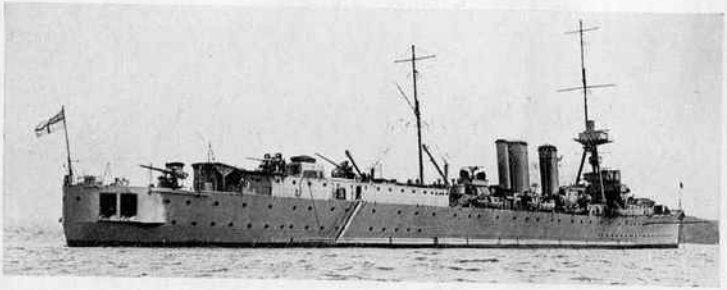
Scrapped—*L* 1, 2, 3, 4, 5, 7, 8, 11, 12, 15, 33. L 6 is still listed but employed on experimental work only.





L 25 only.

MINELAYER.



Showing alteration to Stern.

1932 *Photo, R. Perkins, Esq.*

(Special "Cruiser-Minelayer" Type—1 Ship.)

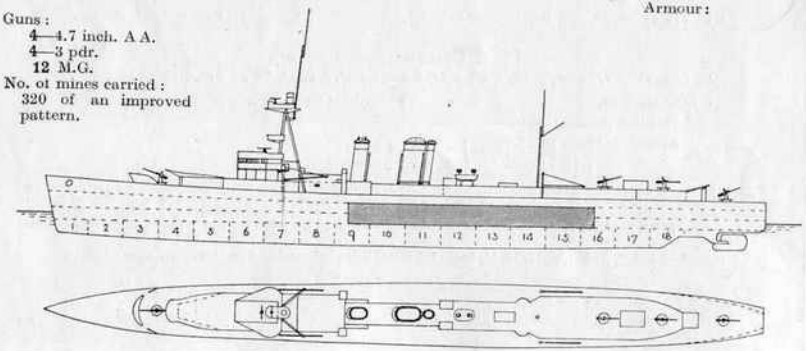
ADVENTURE (18th June, 1924).

"Standard" displacement, 6,740 tons; *normal* displacement, 7,260 tons. Complement.

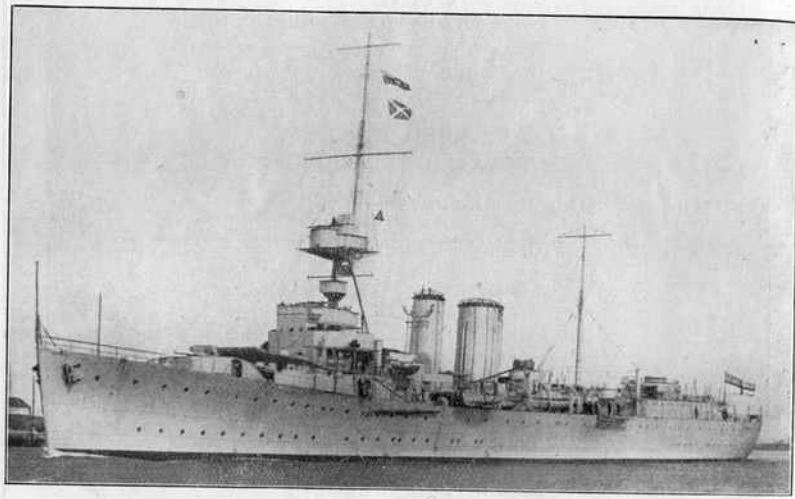
Length { *p.p.*, 500 feet / *o.a.*, 520 feet } Beam, 59 feet, (over bulges) Draught *mean*, 19¼ feet.

Guns:
4—4.7 inch. A A.
4—3 pdr.
12 M.G.
No. of mines carried:
320 of an improved pattern.

Armour:

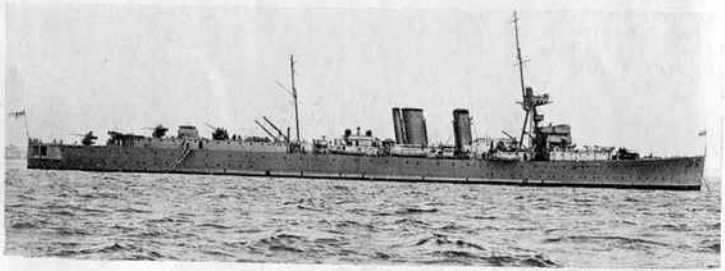


Machinery: Parsons turbines, with Diesel engines for cruising purposes (electrically controlled). 4 screws. Designed S.H.P. 40,000 = 27·75 kts. Boilers: Yarrow. Fuel (oil only): 1550 tons.



Adventure.

1927 *Photo, Gleeves, Ltd.*



1932 *Photo, R. Perkins, Esq.*

Minelaying Tenders.

(ex Monitors.)

MELPOMENE. 1921 *Photo, Abrahams, Devonport.*

MEDUSA (ex-M 29), **MELPOMENE** (ex-M 31), } (Workman Clark),
MINERVA (ex-M 33), (Harland & Wolff).

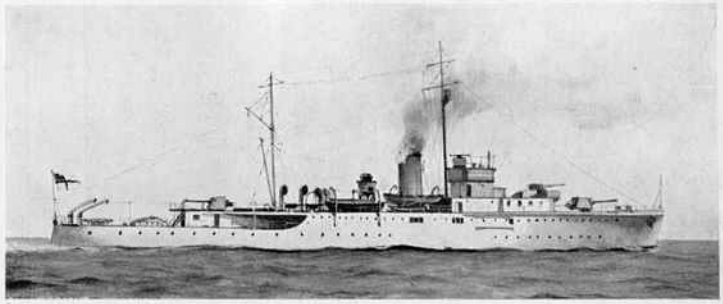
Launched and completed 1915.
535 tons. Complement, 52.
Dimensions: 177 (*o.a.*) × 31 × 6¾ feet. Guns: None.
Carry 52 mines. Designed H.P. 400=10 kts.
Machinery: Triple expansion. 2 screws.
Boilers: Yarrow. Oil fuel: 45 tons.

1921 *Photo, Gieves, Ltd.*

MEDEA (ex-M 22), (1915). Built by Sir Raylton Dixon & Co.
540 tons. Dimensions: 177 (*o.a.*) × 31 × 6 feet. Guns: None.
Carries 44 mines.
I.H.P. 650=12 kts. 2 screws. Oil: 28 tons. Complement, 52.

Sloops.

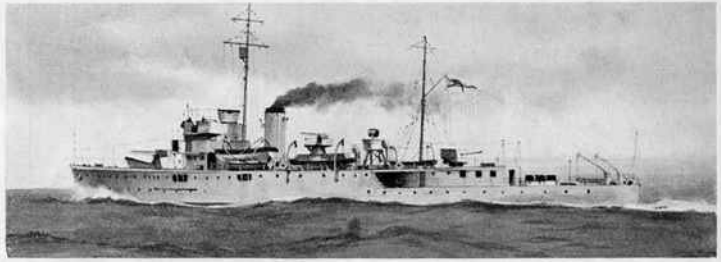
2 Grimsby Class.



GRIMSBY. 1933 *Drawing, Oscar Parkes.*

2 Devonport Dockyard: **GRIMSBY** (July 19, '33), **LEITH** (Sept. 7, '33). 1,060 tons. Dimensions: 266 (*o.a.*) × 34 × 8·7 feet. Guns: 2—4·7", 1—3" AA., 12 smaller. S.H.P. 2,000=16 kts. Oil: 275 tons. Both 1931 Programme and differ from previous vessels in having a forward shelter deck with superfiring AA. gun.

4 Halcyon Class.

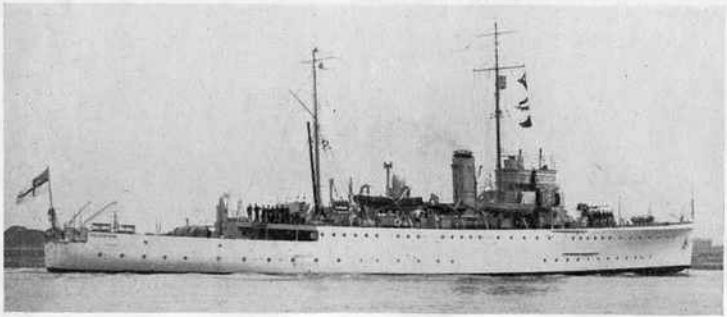


HALCYON. 1933 *Drawing, Oscar Parkes.*

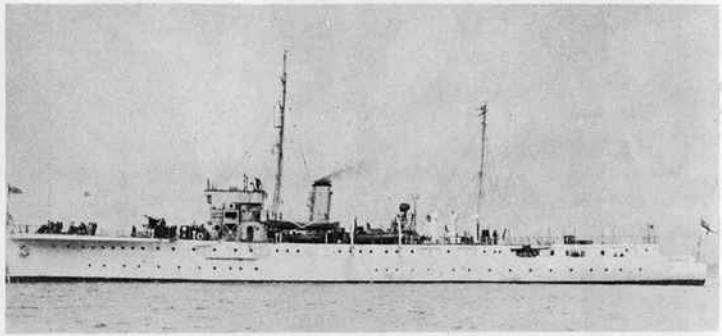
2 John Brown: **HALCYON, SKIPJACK.**
2 Thornycroft: **HARRIER, HUSSAR.**

875 tons. Guns: 2—4", 1 smaller AA., several M.G. Speed: 16 kts. The first pair belong to 1931 Programme, second pair to 1932. Are reduced and cheaper editions of *Sandwich* class, with no loss of efficiency as Sweepers.

BRIDGEWATER. 1929 *Photo, Abrahams, Devonport.*



FOLKESTONE. 1930 *Photo, Cribb.*



FALMOUTH. 1932 *Photo, R. Perkins, Esq.*

(SANDWICH CLASS—16 SHIPS.)

2 *Hawthorn Leslie:* **BRIDGEWATER** (Sept. 14th, 1928), **SANDWICH** (Sept. 28th, 1928).

3 *Devonport Dockyard:* **HASTINGS, PENZANCE.** Completed 1930 and 1931. **FOWEY** (November 4th, 1930). Completed, 1931.

2 *Swan Hunter:* **FOLKESTONE, SCARBOROUGH.** Completed 1930.

1 *Chatham Dockyard:* **SHOREHAM.** Completed 1930.

4 *Devonport Dockyard:* **BIDEFORD** (April 1st, 1931). Completed 1931. **FALMOUTH.** (April 19th, 1932), **MILFORD** (June 11th, 1932). Completed 1932. **WESTON** (ex-*Weston-Super-Mare*). (July 23rd, 1932). Completed 1933.

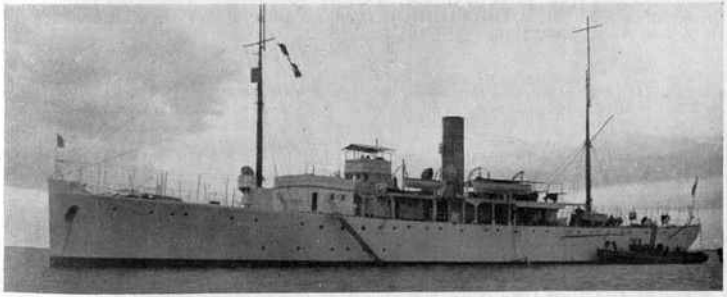
2 *Chatham Dockyard:* **ROCHESTER** (July 16, 1931). Completed 1932. **DUNDEE** (Sept. 20th, 1932). Completed 1933.

2 *Devonport:* **LOWESTOFT, WELLINGTON.**

Displacement: 1025/1105 tons (about 1250 tons deep load). Dimensions: 250 (*p.p.*), (266 *o.a.*), × 34 × 8½ feet. (*mean*). Guns: 2—4 inch AA, 2 M.G. Machinery: Parsons' impulse reaction turbines with single reduction gearing. 2 screws. 2 3-drum watertube boilers, pressure 250 lbs. Designed S.H.P. 2,000=16–16·5 kts. Oil: 275 tons. Designed for service in Far East and fitted for minesweeping. *Bridgewater* and *Sandwich* built under 1927–28 Estimates and both completed March, 1929. Under 1928–29 Estimates: *Hastings, Penzance, Folkestone* and *Scarborough*. Under 1929–30 Estimates: *Fowey, Shoreham, Bideford, Rochester*. Under 1930–31 Estimates: *Falmouth, Milford, Weston, Dundee*. Under 1932 Estimates: *Lowestoft, Wellington*.

Sloops.

HAREBELL. *Photo, Abrahams, Devonport, 12th Oct., 1921.*



BRYONY. 1921 *Photo, J. Spartali, Smyrna.*

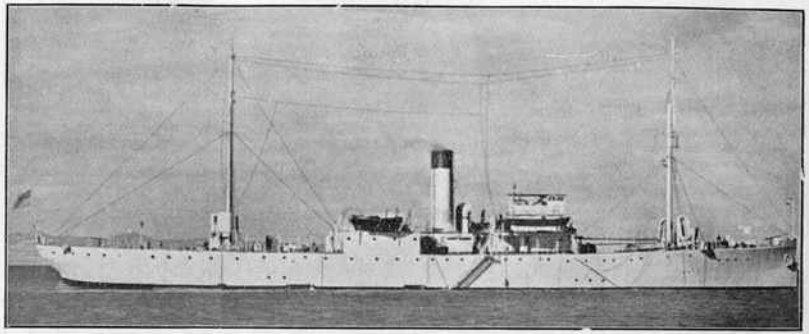
ANCHUSA TYPE—(First 2 Ships)—and AUBRIETIA TYPE—(3rd Ship.)

HAREBELL (May, 1918), by Barclay, Curle. **BRYONY** (Oct., 1917), by Armstrong Whitworth. "Q" Boat type of Convoy Sloop. *Displacement: 1345 tons. Completed Oct., 1916—June, 1918. Dimensions: 250 (*p.p.*), 262½ (*w.l.*) × 35 × 11½-12 (*mean*), 12¼-13⅜ (*max.*) feet draught. Guns: *Harebell*, **2**—4 inch, **4**—3 pdr.; *Bryony*, **4**—3 pdr., **1** M G. Machinery: 4-cylinder triple expansion. Boilers: 2 cylindrical. 1 screw. Designed H.P. 2500 = 16.5 kts. Coal: 260 tons (316 tons in *Harebell*). Complement. 98 (118 in *Harebell*).

Note.—*Lychnis* (now renamed) transferred to Government of India. *Harebell* at present employed on Fishery Protection duties.

Heather scrapped 1932.

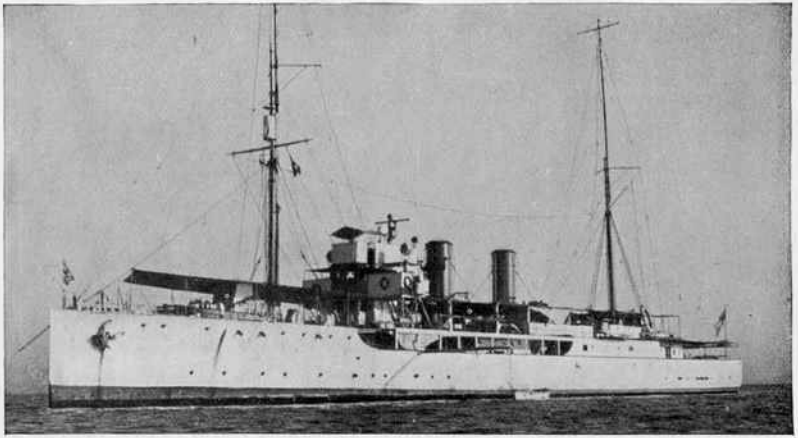
(For Fleet Target Service.)

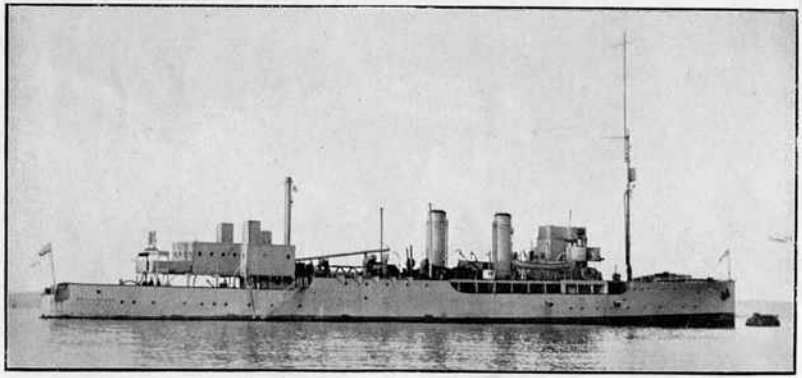


1924 *Photo, Corpl. E. Arnold, R.M.*

CHRYSANTHEMUM (Armstrong, Nov., 1917). Ex-Convoy Sloop of *Anchusa* type (*Flower* classes). 1345 tons. Dimensions: 262¼ (*w.l.*) × 35 × 11 feet. Guns: **2**—3 pdr., **1** M.G. Machinery: 4-cylinder triple expansion. 1 screw. 2 cylindrical boilers. Designed I.H.P. 2500 = 16.5 kts. Coal: 260 tons *max.* Complement, 95.

SLOOPS.

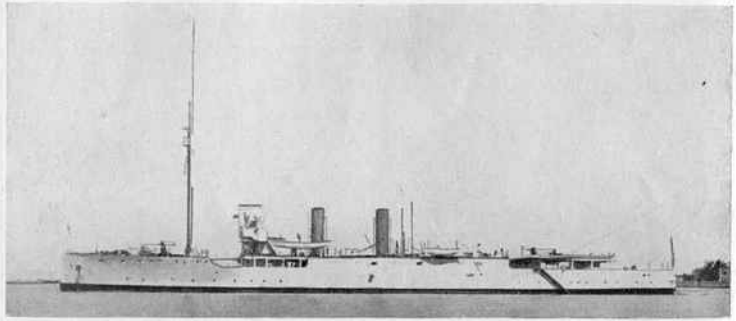




SNAPDRAGON *Photo added*, 1925.

(2 poles abaft second funnel for spreading W/T. aerials now removed.)

Note.—Is fitted with powerful towing engine and special kinema cabinet at stern for taking motion-pictures of fall of shot on and around target. It is reported that this addition to superstructure causes her to roll and reduces speed.



CORNFLOWER. *Photo Dec.* 1920, *Com. M.P. Cocper. R.I.M.*

(ARABIS TYPE—7 SHIPS.)

CORNFLOWER (Mar., 1916), by Barclay, Curle. **GODETIA** (Jan., 1916), by Connell. **SNAPDRAGON** (Dec., 1915), by Ropner. **LUPIN** (May, 1916), by Simons. **VERBENA** (Blyth S.B. Co., Nov., 1915), **DELPHINIUM** (Napier & Miller, Dec., 1915), **ROSEMARY** (Richardson, Duck, Nov. 1915).

Displacement, 1175 tons (1373 tons *deep load*), but those refitted for service on Foreign Stations now displace up to 1500 tons *normal*, with a *mean* draught of 12-14 feet.

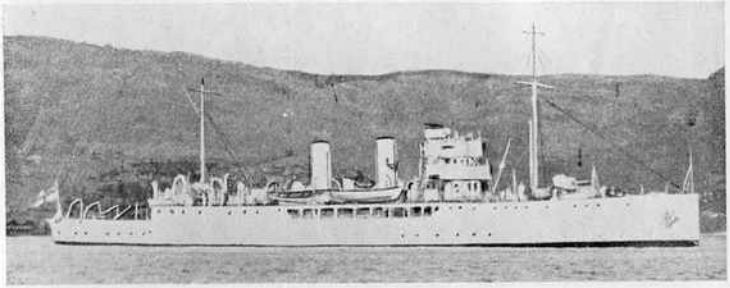
Completed, Dec., 1915—June, 1916. Dimensions: 255¼ (*p.p.*), 267¾ (*o.a.*) × 33½ × 11 (*mean*), 11½-11¾ *feet* (*max.* draught) for 1250 tons displacement. For present guns *v.* Table below. Designed I.H.P. 2000=16.5 kts. Machinery: 1 set 4-cylinder triple expansion. Boilers: 2 cylindrical. 1 screw. Coal: 130 tons *normal*, 260 tons *max.* = *about* 2000 miles at 15 kts. (*Lupin* is now oil-fired.) Complement, 98/118 for Foreign Service. Also see *General Notes*.

Snapdragon fitted for Fleet Target Duties. *Godetia* at present employed on Fishery Protection Duties.

		GUNS CARRIED.†	
		Cornflower	2—4 inch 16 smaller
Delphinium, *Verbena*, *Lupin*	2—4 inch* 14 smaller	*Godetia*	1—4 inch 3 smaller.
		Rosemary	1—4 inch 12 smaller.

*In those refitted for Foreign Service, 4 inch are Mk. IV, with 30° elevation, with Light Directors.
† Some carry 8 to 10 Lewis guns in addition.

Delphinium and *Verbena*, paid off in 1932.



(Acacia Type.) *Photo added* 1932.

HELIOTROPE (Lobnitz, Sept., 1915).

FOXGLOVE (Mar., 1915), both by Barclay, Curle. **DAFFODIL** (August, 1915), by Scotts S.B. Co. **LABURNUM** (June, 1915), by Connell & Co. **VERONICA** (Dunlop, Bremner, May, 1915).

All 1165 tons *standard*, 1269–1325 *full load*. Completed, May-Sept., 1915. Dimensions: 250 (*p.p.*), 262½ (*o.a.*) × 33 × 11 (*mean*), 11½-12 feet (*max.* draught). For present guns, see Table on next page. Designed H.P. 1800 = 16.5 kts., but actually require about 2200 I.H.P. for this speed. Machinery: 1 set 4-cylinder triple expansion. Boilers: 2 cylindrical. 1 screw. Coal: 130 tons *normal*, 250 tons *max.* = *about* 2000 miles at 15 kts. Complement, 104.

Guns Carried. (Several carry M.G. in addition.)

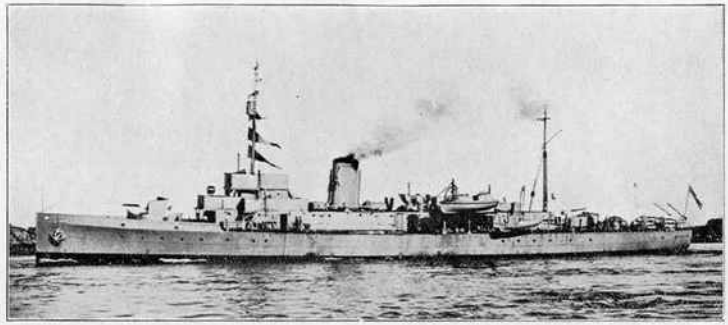
Foxglove *Laburnum* *Veronica* *Daffodil*	2—4 inch. 14—16 Smaller.	*Heliotrope*	1—4 inch. 16 Smaller.

General Notes, for Arabis and Acacia Types.

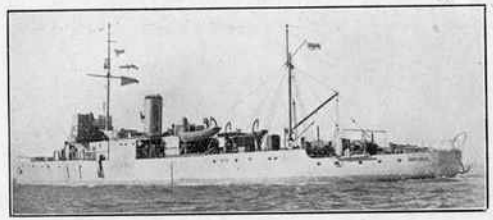
Single-screw Fleet Sweeping Vessels (Sloops), all built under Emergency War Programme. Originally planned that only 12 should be ordered, but the first series ordered December, 1914-January, 1915, comprised 24 ships. A further 48 were ordered between May and September, 1915. In all, 72 of these ships were built. To ensure rapid building, design was made as simple as possible; mercantile practice was resorted to and orders were distributed among firms which did not usually build war vessels up to 1914. Built under Lloyds survey, in about 25 weeks. Have triple hulls at bows to give extra protection against loss when working up mines. Not handy ships, as single screw gives a wide turning circle. Very lively ships, but can face any weather. Few can do more than 15 knots at sea. Some have been altered to burn oil fuel.

Magnolia scrapped in 1931. *Dahlia* scrapped 1932.

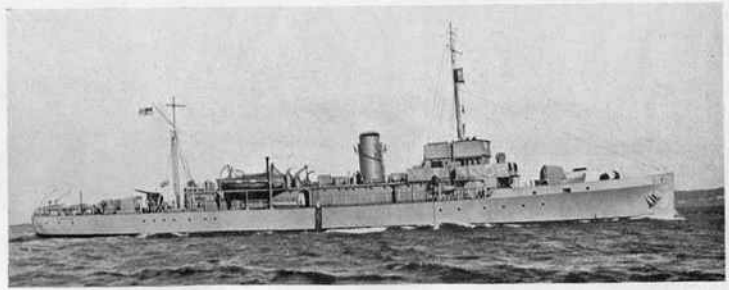
Minesweepers. (Details next page.)



Tiverton. 1929 *Photo, Abrahams, Devonport.*

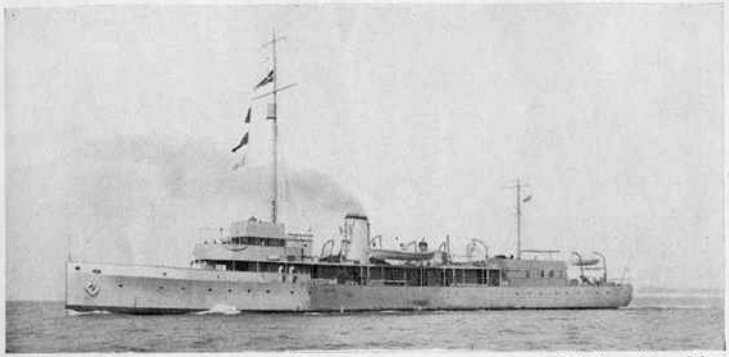


Tedworth. 1924 *Photo, Abrahams, Devonport.*



Sutton. 1931 *Photo, Kestin, Weymouth.*

MINESWEEPERS.



ALRESFORD. 1921 *Photo, Gieves, Ltd.*

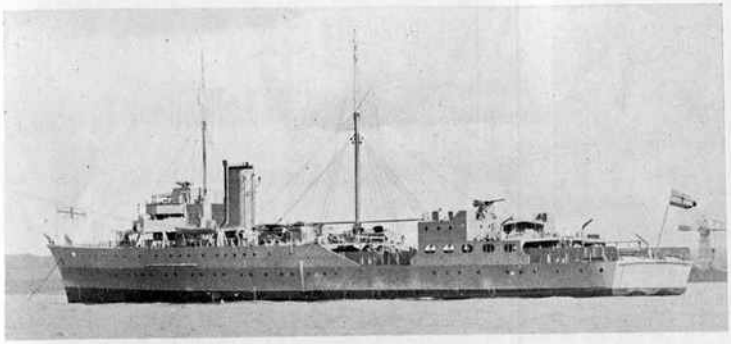
FERMOY. 1929 *Photo.*

(TWIN SCREW CLASS—27 SHIPS.)

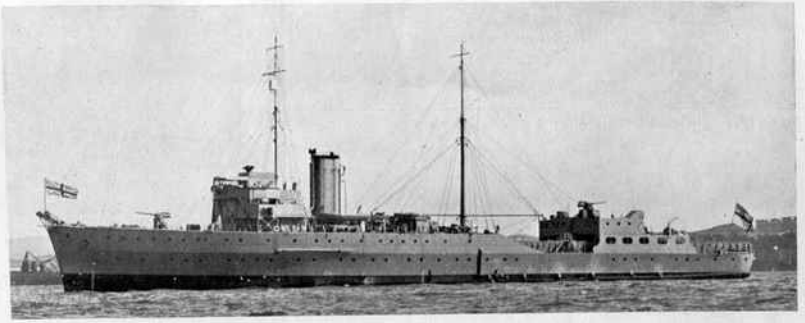
4 Ailsa S.B. Co : **ABERDARE, ABINGDON** (a). **ALBURY** (b), **ALRESFORD.**
1 Ardrossan Co. : **BAQSHOT.**
2 Bow, McLachlan : **CARSTAIRS, CATERHAM.**
4 Clyde S.B. Co. : **DERBY** (a), **DUNDALK** (b), **DUNOON** (b), **FORRES** (b).
1 Dundee S.B. Co. : **FERMOY** (a).
1 Dunlop Bremner : **FAREHAM** (a).
2 Eltringhams : **HARROW** (a), **HUNTLY** (b).
1 Fairfield : **LYDD** (a).
2 Lobnitz : **PANGBOURNE, ROSS** (b).
1 McMillan : **SUTTON** (a).
3 Murdoch & Murray : **SALTASH** (a), **SALTBURN** (a), **SELKIRK** (b).
1 Napier & Miller : **WIDNES.**
1 Chas. Rennoldson : **STOKE** (a).
3 Simons : **ELGIN** (b), **TEDWORTH, TIVERTON** (a).

All built under Emergency War Programme and launched between June, 1917 and Aug., 1919. Displacement, 710 tons ; *except Tedworth*, 660 tons. Dimensions : 220 (*p.p.*), 231 (*o.a.*) × 28 ft. 7½ in. × 7½ ft. (*mean* draught). Machinery : Vertical triple expansion. 2 screws. Yarrow boilers. Designed I.H.P. 2200 = 16 kts. ; *except Tedworth*, 1800 = 14 kts. Coal : 185 tons = *about* 1500 miles at full speed (*Tedworth*, only 140 tons). Complement of all, 73. Guns : in Ships marked (a), 1—4 inch, 1—12 pdr. ; marked (b), 1—6 pdr. *Tedworth*, 1—3 inch AA. ; and remainder carry no guns at present.

The majority of these ships are paid off and comprise the Reserve of mine-sweepers. *Tedworth* is tender to Gunnery and Diving Schools, Devonport. There are various minor variations in these ships, besides those illustrated above, *e.g.*, many have had gallows and sweeping gear removed, deck houses built aft, &c. *Petersfield* lost 1932, *Marazion*, scrapped 1933.



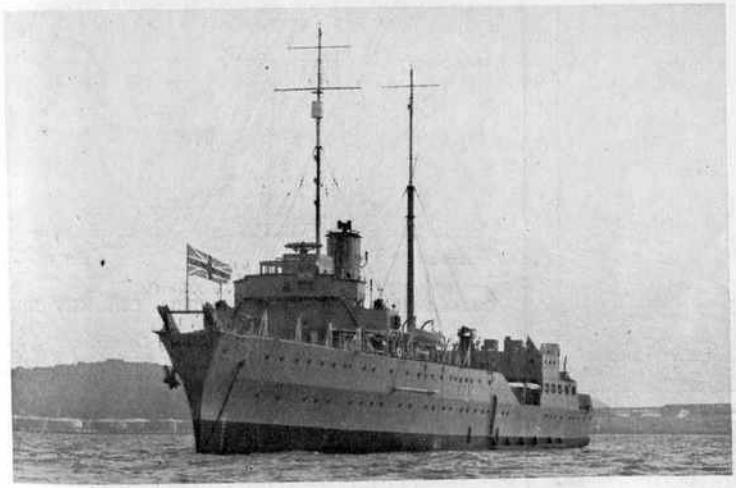
1933 *Photos.*



GUARDIAN (Chatham Dockyard, Sept. 1, 1932).
Displacement : 3,050 tons. Complement :
Dimensions : 310 × 53 × 12½ feet.
Guns : 2—4″.
Machinery : Geared Parson's turbines : H.P. 6,500 = 18 kts.
Fuel : .

General Notes.—Designed for Net-laying and Fleet Photography work. The nets, sinkers and buoys are stowed, port and starboard, on the upper deck from just forward of the main-mast under the forecastle deck to the stern. Practice nets are retrieved by means of the brow forward. The structure aft, placed on the deck spanning the nets, is the cinema cabin.

This ship is very beamy in relation to her length, the proportion being 1:6 only. She is by far the biggest net-layer ever built and is likely to remain so, being intended for instructional purposes and the laying of special barrages.

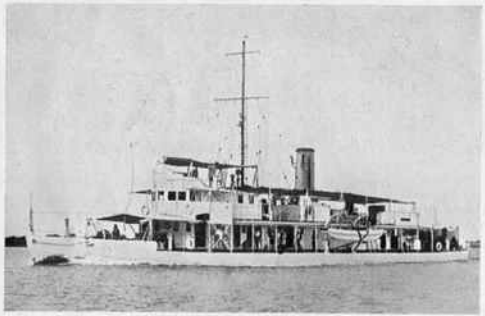


GUNBOATS.

River Gunboats.

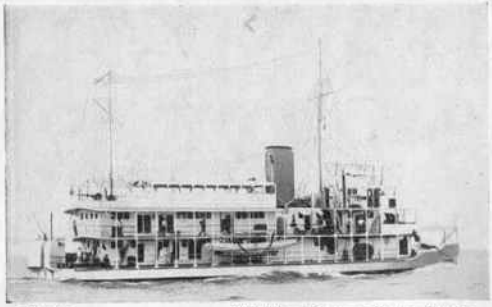
Building

ROBIN. Ordered from Messrs. Yarrow, 1933.



SANDPIPER. 1933 *Photo, courtesy of builders.*

SANDPIPER (Thornycrofts). 185 tons. Guns: 1—3·7 inch Howitzer, 9 smaller. H.P., 600 = 11¼ kts.

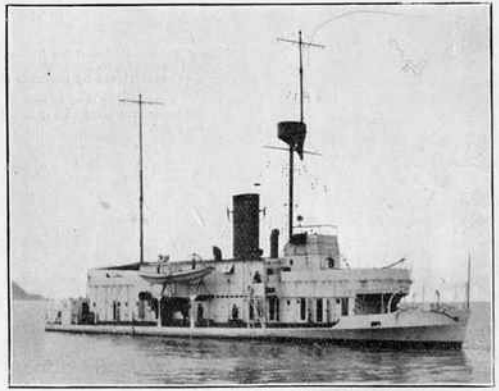


FALCON. 1931 *Photo, favour of Messrs. Yarrow.*

FALCON (1931) built by Messrs. Yarrow & Co., Ltd. Guns: 1—3·7" Howitzer. 2—6 pdr., Hotchkiss. 8 M.G. Dims.: 150 × 28·8 × 4·9ft. = 372 tons. displ. S.H.P. 2,250 = 15 kts. Fuel = 84 tons oil.

River Gunboats—*continued.*

GANNET (1927) & **PETEREL** (1927), both designed and built by Messrs. Yarrow & Co., Ltd. Displacement, 310 tons. Dimensions: 177 (*w.l.*), 184⅜ (*o.a.*) × 29 × 3 ft. 2½ ins. draught. Guns: 2—3 inch AA., 8 M.G. Machinery: Geared turbines. Boilers: Yarrow. Designed H.P. 2250 = 16 kts. Fuel: 60 tons oil.



TERN. 1928 *Photo, Lieut. P.B.A. Caruana, R.N.*

SEAMEW (1927), **TERN** (1927), both designed and built by Messrs. Yarrow & Co., Ltd. Displacement, 262 tons. Dimensions: 160 (*w.l.*), 167½ (*o.a.*) × 27 × 3 ft. 2¾ ins. draught. Guns: 2—3 inch AA., 8 M.G. Machinery: Geared turbines. Boilers: Yarrow. Designed H.P. 1370 = 14 kts. Fuel: 50 tons oil.

River Gunboats—*continued.*

SCARAB. *Photo added* 1925.

BEE (as flagship S.N.O., Yangtse River). *Photo by favour of R. G. Strugnell, Esq.* (TARANTULA similar, but has large crow's nest.)

APHIS. 1929 *Photo.*

APHIS (1915), **BEE** (1916), both by Ailsa Co.
CICALA (1915), **COCKCHAFER** (1915), **CRICKET** (1915), all by Barclay Curle.
GNAT (1915), **LADYBIRD** (1915), both by Lobnitz.
MANTIS (1915), **MOTH** (1915) both by Sunderland S.B. Co.
SCARAB (1915), **TARANTULA** (1915), both by Wood, Skinner and Co.

625 tons. Compl. 54—65. Dimensions: 237½ (*o.a.*) × 36 × 4 feet. Guns: 2—6in. (*Bee, Tarantula*, 1—6in. only). 1—3in AA. 9 to 11 smaller guns. Machinery: Triple expansion. Twin screws in tunnels fitted with Messrs. Yarrow's patent balanced flap. Boilers: Yarrow. Designed H.P. 2000 = 14 kts. Fuel: 35 tons coal, 54 tons oil. (*Moth*, 76 tons oil only). On Trials 18 knots was easily obtained.

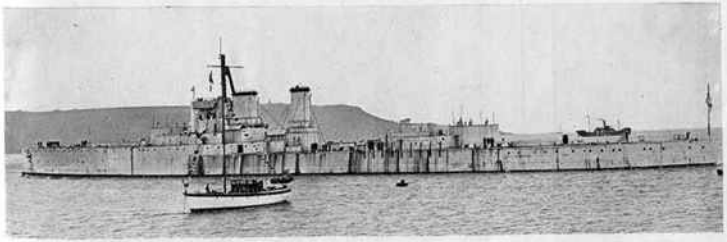
Note.—Messrs Yarrow & Co., Ltd., were solely responsible for the design of these vessels, which were built under their supervision during the War.

Training Ship

1933 *Photo, Cribb.*

IRON DUKE ex-battleship of 26,250 tons displacement. Demilitarised under London Treaty, 1931-32, when the B and Y turrets, conning tower, belt armour, and tt. were removed. Speed reduced to 18 kts. Employed as Gunnery T.S. Present armament: 6–13·5 inch, 12–6 in. guns.

Target Ship



1933 *Photo, R. Perkins, Esq.*

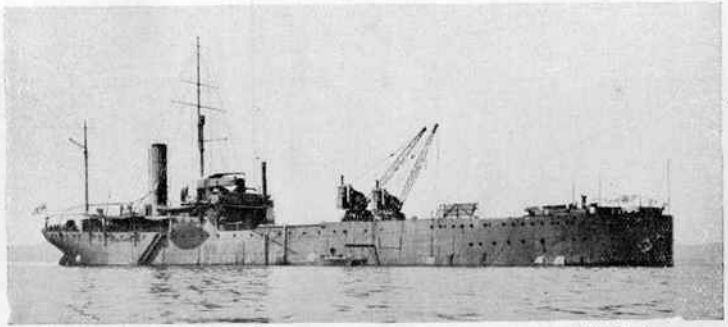
CENTURION (ex-battleship).

25,395 tons. 16 kts. Complement, 250. Employed as radio controlled target,

Depot Ship.

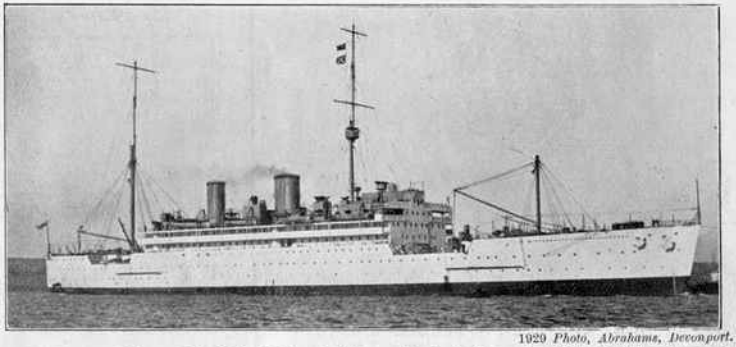
WOOLWICH (Fairfield). Laid down 1933. No details available. Depot ship for destroyers.

Depot Ships—*continued.*



1913 *Illustration.*

ARK ROYAL (Blyth S.B. Co., 1914, purchased during construction 1914). 6900 tons. Dimensions: 352½ (*p.p.*), 366 (*o.a.*) × 50½ × 17½ feet (*mean*). Guns: **4** M.G., **10** Lewis. I.H.P. 3000 = 11 kts. Machinery: Vertical triple expansion. 1 screw. Boilers: Cylindrical. Oil: 500 tons. Complement, 139. Originally employed as an Aircraft Tender. Refitted 1920-21. Until lately, Depot Ship for Central Reserve of Minesweepers, and since used periodically by School of Naval Co-operation. Employed in experimental work with aircraft landing rafts and catapults.

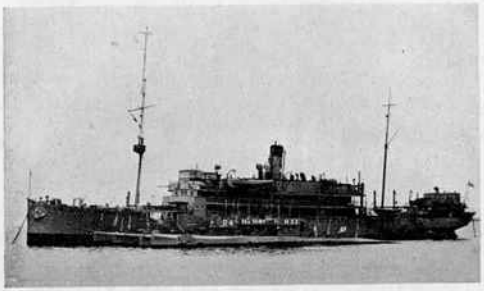


1929 *Photo, Abrahams, Devonport.*

MEDWAY. (Vickers, July 19th, 1928). Laid down April, 1927, under 1926-27 Estimates, and completed in Sept., 1929. Displacement, 15,000 tons. Dimensions: 545 (*p.p.*), 580 (*o.a.*) × 85 × 23 feet. Guns: **2**—4 inch, **4**—4 inch AA. Has twin-screw double-acting 2 stroke M.A.N. Diesel engines, total H.P. 8000 = 16 kts. Oil: 530 tons own fuel + 1900 tons for submarines. Equipment includes a Foundry, Machine shop, Plate shop, Smithy, Torpedo shop, Plumber's shop, etc. Designed to mother 18 submarines.

DEPOT SHIPS

Depot Ships—*continued.*



1931 *Photo, Kestin, Weymouth.*

TITANIA (Clyde S.B. Co., 1915, purchased 1915). 5250 tons. Dimensions: 335 (*p.p.*) × 46¼ × 18 feet 5 ins. I.H.P. 3200 = 14.5 kts. Torpedo tubes: 2. Coal: 498 tons. Complement, 249. Cyl. boilers.

(Submarines.)

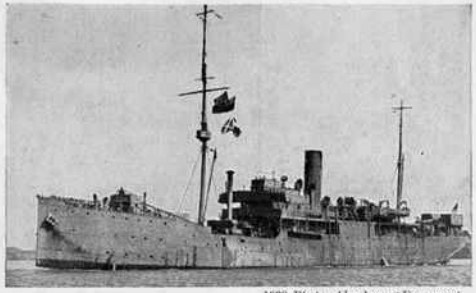
1918 *Photo, Abrahams, Devonport.*

SANDHURST (ex S.S. *Manipur*, Harland & Wolff, purchased 1915 and converted by Workman, Clark). 11,500 tons. Dimensions: 470 (*p.p.*) 485 (*o.a.*) × 58 × 20 feet (*max.* draught). *Guns 4—4 inch, 1—3 inch AA. I.H.P. 3300 = 10.5 kts. Coal: 1475 tons. Complement, 258. Cyl. boilers.

* Also carries several additional 4 inch guns as spares for destroyers and 2—H.A. pom-poms on forecastle.

(Destroyers.)

Depot Ships—*continued.*

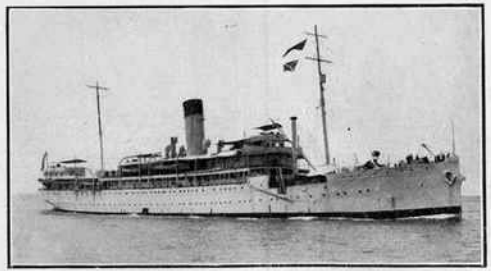


1920 *Photo, Abrahams, Devonport.*

LUCIA (Furness Withy & Co., 1907, ex German Prize, *Spreewald*,* converted by Clyde S.B. Co., 1916). 5805 tons. Dimensions: 367½ (*o.a.*) × 45 feet 2½ ins. × 18⅝ feet. Guns: 2—3 pdr. AA. I.H.P. 2750 = 12·7 kts. Coal: 615 tons. Cyl. boilers. Complement, 262.

*Hamburg-America Liner, captured by H.M.S. *Berwick*, September, 1914.

(Submarines.)

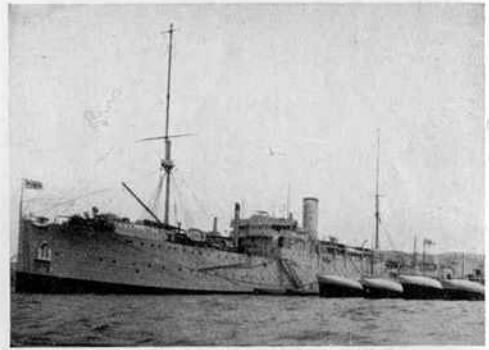


AMBROSE. 1928 *Photo, Cribb.*

AMBROSE (Sir Raylton Dixon & Co., 1903, converted by Clyde S.B. Co., 1915. Purchased 1915). 6600 tons. Dimensions: 387¾ (*o.a.*) × 47½ × 20¾ feet. I.H.P. 6350 = 14½ kts. Coal: 540 tons. Complement, 238.

(Accommodation Ship.)

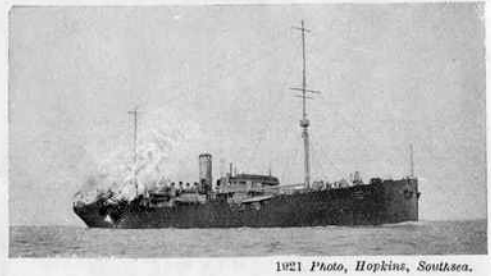
Depot Ships—*continued.*



1923 *Photo, R. Perkins, Esq.*

CYCLOPS (*ex-Indrabarah*, Sir Jas. Laing & Co., 1905). 11,300 tons. Dimensions: 460 (*p.p.*), 477 (*o.a.*) × 55 × 21 ft. 2 in. Guns: 2—4 inch (mounted in bows). Machinery: Triple expansion. Designed H.P. 3500 = 13 kts. Coal capacity: 1595 tons. Complement, 266.

(Submarines.)



1921 *Photo, Hopkins, Southsea.*

GREENWICH (Dobson & Co., completed by Swan Hunter. Purchased 1915). 8100 tons. Dimensions: 390 (*p.p.*), 402 (*o.a.*) × 52 × 19⅝ feet (*max.* draught). Guns: 4—4 inch, 1—3 inch AA. I.H.P. 2500 = 11 kts. Coal: 960 tons. Complement, 244. Cyl. boilers.

(Destroyers.)

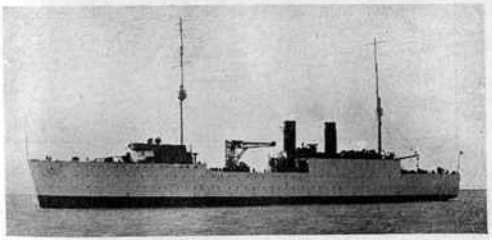
Depot Ship.

ADAMANT. 1921 *Photo, Gieves, Ltd.*

ALECTO (Laird, 1911). 935 tons. Dimensions: 190 (*p.p.*), 212 (*o.a.*) × 32½ × 11 ft. 1 in. (*mean*). Guns: none. Designed H.P. 1400 = 14 kts. Coal: 180 tons. Complement, 76.

(Submarines.)

Repair Ship.



1930. *Messrs. Vickers-Armstrong.*

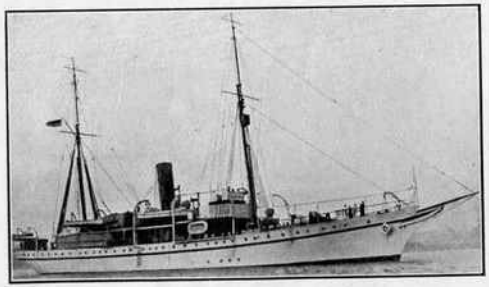
RESOURCE (Vickers, Nov. 27th, 1928), laid down, August, 1927, under 1926-27 Estimates. She was completed in Oct., 1929. Displacement, 13,500 tons. Dimensions: 500 (*p.p.*) × 83 × 20½ feet. Guns: 4—4 inch AA. 2 sets Parsons single reduction geared turbines. H.P. 7500 = 15 kts. 4 Yarrow 3-drum boilers, pressure 235 lbs. Auxiliary machinery is Diesel, electrically driven. Oil: 1100 tons + 350 tons for other vessels.

Surveying Vessels

KELLETT. 1924 *Photo, Abrahams, Devonport.*

BEAUFORT (1919), by Ailsa S.B. Co. **FITZROY** (1919), **FLINDERS** (1919), both by Lobnitz & Co. **KELLETT** (1919), by Simons & Co. Converted Twin Screw Minesweepers of "Hunt Class." 800 tons. Dimensions: 231 (*o.a.*) × 28 ft. 7¼ in. × 7½ feet. Guns: 1—3 pdr. I.H.P. 2200 = 16 kts. Machinery: Vertical triple expansion. 2 screws. Boilers: Babcock or Yarrow. Coal: 185 tons. Complement, 88.

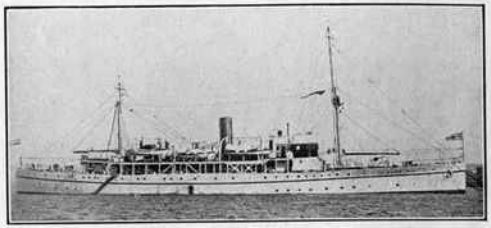
Protea, ex Crozier (South Africa) has been scrapped.



1924 *Photo, Abrahams, Devonport.*

ENDEAVOUR (Fairfield, 1912). 1280 tons. Dimensions: 241¼ (*o.a.*) × 34 ft. 2 in. × 11⅝ feet. Guns: 1—3 pdr., 1 M.G. H.P. 1100 = 13 kts. Coal: 220 tons. Complement, 140. Specially built for Hydrographic Duties.

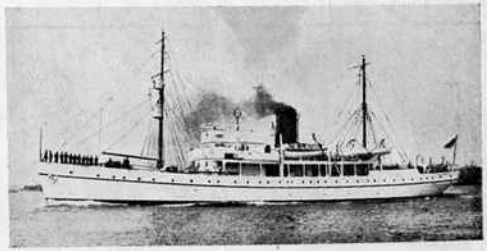
Surveying Vessels—*continued.*



ORMONDE. (HERALD similar; IROQUOIS has shorter funnel). 1924 *Photo, Abrahams, Devonport.*

IROQUOIS (Barclay, Curle, 1918), **ORMONDE** (1918), **HERALD** (ex *Merry Hampton*, 1918), both by Blyth S.B. Co. Converted Minesweepers of "24" (Racehorse) class. 1320 tons. Dimensions: 276½ × 35 × 12 feet. Guns: 1—3 pdr. I.H.P. 2500 = 17 kts. Coal: 260 tons. Cylindrical Boilers.

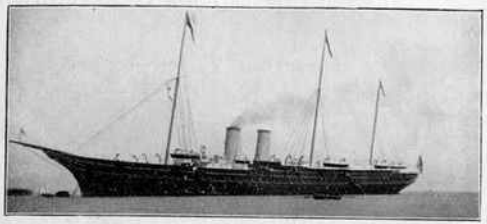
Note.—All converted by Devonport D.Y., 1922-23. Sister ship *Moresby* has been transferred to R. Australian Navy 1925.



1932 *Photo, Wright & Logan.*

CHALLENGER built for research work by Fisheries Board: to be employed on Surveying duties. Constructed at Chatham D.Y. 1930-31. Dimensions: 220 (*o.a.*) 200 (*p.p.*) × 36 × 12½ feet. Displacement: 1,400 tons. Triple expansion engines, oil fired. H.P. 1200 = 12½ kts. 1 screw. Oil = 340 tons. Has the phenomenal radius of 9,000 miles.

Royal Yacht.



VICTORIA AND ALBERT (1899). 4700 tons. Dimensions: 380 (*p.p.*) × 40 × 18 feet (*mean* draught). Guns: 2—6 pdr. (bronze). H.P. 11,800 = 20 kts. Belleville boilers. Coal: *normal*, 350 tons; *maximum*, 2000 tons. Comp. 363.

Admiralty Yacht.

1920 *Photo.*

ENCHANTRESS (1903). 3470 tons. Dimensions: 320 × 40 × 15 feet. Guns: 4—3 pdr. H.P. 6400 = 18 kts. Yarrow boilers. Coal: 350 tons.

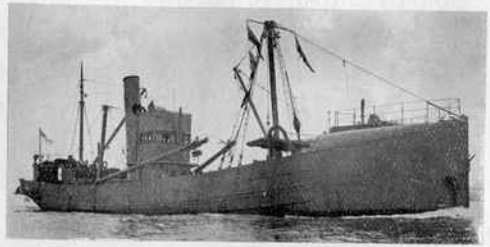
Tenders.

NIGHTINGALE. 1931 *Photo, Cribb.*

NIGHTINGALE, (built at Portsmouth 1931). Displacement: 255 tons. Dimensions: 106 × 25·8 × 6·8 feet. H.P: 400= 10 kts. Fuel (coal): 15 tons. (Tender to *Vernon.*)

SKYLARK, (built at Portsmouth 1932-33). Tender to *Vernon.*

Tenders—*continued.*



VERNON. 1921 *Photo, Cribb, Southsea.*

VERNON, (ex-*Strathcoe.*) (Hall, Russell, 1916, purchased). 436 tons. 117⅔ (*o.a.*) × 22 × 14 ft. 10 in. *max.* draught. No guns. Carries 24 mines. I.H.P. 430=*about* 10 kts. Coal: 110 tons. Complement: 15.

KATE LEWIS, (Converted Trawler built by Cochrane, 1916, purchased). *About* 325 tons gross. Dimensions: 117⅔ (*o.a.*) × 22 × 12 ft. 4 in. No guns. Carries 24 mines. I.H.P. 475= 11 kts. Coal: 110 tons. Complement: 15.

Note.—Similar to *Vernon* in appearance, but has taller foremast and no raised forecastle.

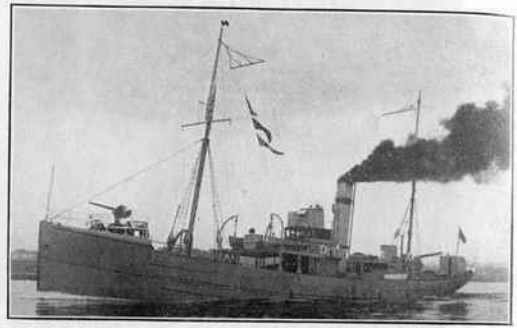
REDWING, for Devonport Gunnery School.

ELFIN, for Portland S/m flotilla. Both laid down 1933 at White's, Cowes.

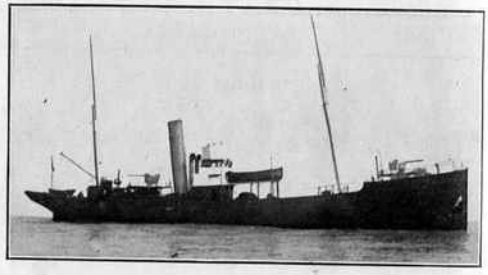
PIGMY, for Portsmouth S/m flotilla.

15 Trawlers.

Note.—Those marked * are rated as "Fishery Protection Gunboats." Have black topped funnels, and carry 1—12 pdr. *Pembroke* has same armament, plus 2—3 pdr. *Colne* has bowsprit and bow walk.



"MERSEY" TYPE. 1926 *Photo, Abrahams & Sons, Devonport.*

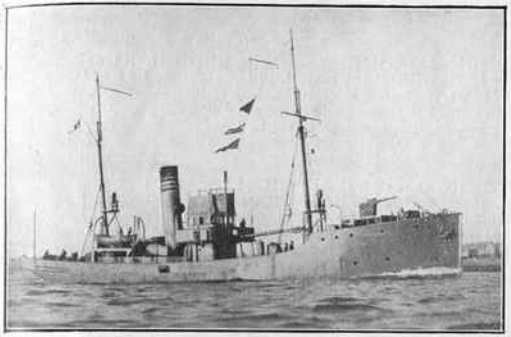


EXCELLENT. 1928 *Photo, C. Cozens.*

Blackwater	(ex-*William Inwood*).	**James Ludford.**	
*Boyne	(ex-*William Jones*).	**Moy**	(ex-*Alexander Hills*).
*Cherwell	(ex-*James Jones*).	**Ouse**	(ex-*Andrew King*).
*Colne	(ex-*Isaac Chant*).	**Pembroke**	(ex-*Stour*, ex-*Daniel Fearall.*)
*Doon	(ex-*Fraser Evans*).		
Excellent	(ex-*Nith*, ex-*Andrew Jewer*).		

All belong to "Mersey" type (designed by Messrs. Cochrane & Sons, Ltd., Selby, 1917-18). All built by Messrs. Cochrane except *Colne* and *James Ludford*, by Lobnitz. Displacement: 665 tons (324 tons *gross*). Dimensions: 138¼ (*p.p.*) × 23¾ × 13½ feet. Triple expansion engines. 1 boiler. I.H.P. 550 = 11 kts. Coal: 204 tons. *Boyne*, *Cherwell*, are R.N.R. mine-sweeping instructional vessels; *Moy*, *Ouse*, are on Fleet Target Service.

Trawlers.—*continued.*



"DEE" TYPE. 1926 *Photo, Gieves Ltd., Portsmouth.*

*Dee (ex-*T* 16, ex-*Battleaxe*). *Kennet (ex-*T* 17, ex-*Iceaxe*).

*Garry (ex-*T* 13, ex-*Goldaxe*). *Liffey (ex-*T* 14, ex-*Stoneaxe*).

Ex-Russian Trawlers, designed and built by Smiths Dock Co., Ltd., 1916. Displacement: about 500 tons. (292 tons *gross*). Dimensions: 130 (*p.p.*) × 23½ × 13½ feet. I.H.P. 490 = 11.5 kts. Coal: 140 tons.

Robert Cloughton (1917). "Castle" type, designed by Smiths Dock Co., Ltd., and built by Bow, McLachlan & Co., Ltd., 547 tons. (273 tons *gross.*) Dimensions: 125 (*p.p.*) × 22½ × 12½ feet. I.H.P. 480 = 10.5 kts. Coal: 164 tons. Boom working vessel at Rosyth.

Fastnet, Boom working vessel at Singapore.

27 Drifters.

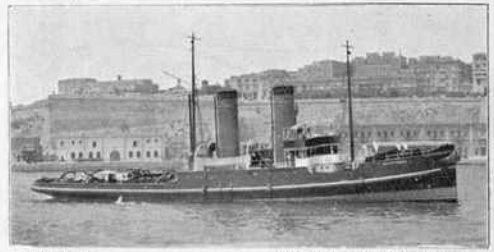
(All built of steel except those marked with an asterisk, which are believed to be wood. Those marked † are on Fleet Auxiliary List).

Billow.	***Landfall.***
Cascade.	***Leeward.***
Cloud.	†***Loraine.***
Cold Snap.	***Lunar Bow.***
Crescent Moon.	***Mist.***
**Ebbtide* (ex-*C.D. 1*).	***Noontide.***
Eddy.	†**Onyx* (ex-*C.D. 82*).
Flicker.	***Seabreeze.***
**Fumarole.*	***Sheen.***
†***Glitter.***	***Shower.***
Halo.	***Sundown.***
Harmattan.	***Sunset.***
Horizon.	***Whirlpool.***
Indian Summer.	

Displace 199 tons (except ex-*C.D.* type, 150 tons). Dimensions: 87 × 19¾ × 9½ feet. I.H.P. 270 = 9 kts. Guns: Usually 1—6 pdr. or 3 pdr. Coal: 31-39 tons.

Note.—Cascade lent to Air Ministry, 1928.

18 Fleet Tugs.



ROYSTERER. 1929 *Photo, N. T. Tangye, Esq.*

4 ROLLCALL TYPE.

RESOLVE, RESPOND (both by Ayrshire D.Y. Co.), **RETORT.** (Day, Summers & Co.), **ROYSTERER** (Thornycroft.) Built 1918-19. About 825 tons *gross.* Dimensions: 175×34×17, (*maximum* draught). 2 screws. I.H.P. 2,500=14 kts.

All on Fleet Auxilliary List.

1929 *Photo, N. T. Tangye, Esq.*

(Some have black-topped funnels; are mostly differentiated by funnel bands).

14 "RESCUE" TYPE (SAINT CLASS).

ST. ABBS, ST. BLAZEY, ST. BREOCK, ST. CLEARS, ST. CYRUS, ST. DAY, ST. DOGMAEL, ST. FAGAN, ST. ISSEY, ST. JUST, ST. MARTIN, ST. MELLONS, ST. MONANCE, ST. OMAR.

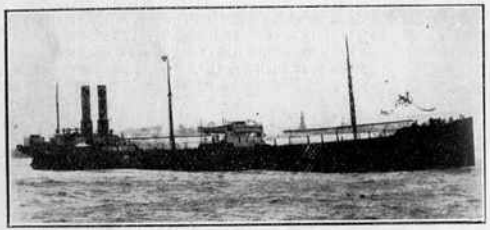
Built by various yards, 1918-19. About 425 tons *gross.* Dimensions: 135 × 30 × 14½ feet (*maximum* draught), 1 screw. I.H.P. 1,250=12 kts. Coal: 240 tons.

Note.—St. Cyrus, St. Fagan, St. Issey, St. Martin, employed for Target Towing, others on Fleet Auxiliary List. Another of this type, *Toia* (ex *St. Boniface*) transferred to New Zealand.

Oilers (R.F.A.).

1930 *Photo, R. Perkins, Esq.*

OLEANDER (Pembroke D.Y., 1922), **OLNA** (Devonport D.Y., 1921). 7045 and 7023 tons *gross*, respectively. Dimensions: 430 × 57 × 26¼ feet. Deadweight capacity: 10,000 tons. Triple expansion engines and cylindrical boilers.
Note.—*Olna* used for experiments with Oertz rudder, 1929.



DELPHINULA. *Photo added 1927, by courtesy of Messrs. Armstrong.*

DELPHINULA (ex-*Buyo Maru*, Armstrong, 1908). 4990 tons *gross*. Dimensions: 385 × 50½ × 24⅝ feet. Deadweight capacity: 6600 tons. Triple expansion engines and cylindrical boilers.

SERBOL. 1920 *Photo, Gieves, Ltd.*

FRANCOL (Earles S.B. Co.), **MONTENOL** (W. Gray), **SERBOL** (Caledon S.B. Co.). All details as *Belgol* below, but of different appearance. All launched 1917.

Oilers (R.F.A.)—*continued.*

LEAF Type. *Photo added 1927.*

APPLELEAF (ex-*Texol*) (Workman Clark), **CHERRYLEAF** (Sir R. Dixon & Co.), **PLUMLEAF** (ex-*Trinol*) (Swan Hunter), **BRAMBLELEAF** (Russell & Co.), **ORANGELEAF** (J. L. Thompson & Sons), **PEARLEAF** (W. Gray & Co.). All launched 1917. Displacement, 11,628 tons (from 5891 to 5927 tons *gross*). Dimensions: 405 × 54½ × 27½ feet. Triple expansion engines and cylindrical boilers. I.H.P. 6750 = 14 kts. Deadweight capacity: First three, 5400 tons; second three, 5000 tons.

SLAVOL. 1920 *Photo, Abrahams, Deconport.*

BELGOL (Irvine's S.B. & D.D. Co.), **CELEROL** (Short Bros.), **FORTOL** (McMillan), **PRESTOL** (Napier & Miller), **RAPIDOL** (W. Gray), **SLAVOL** (Greenock D.Y. Co.). All launched 1917. 5049 tons. Dimensions: 335 × 41½ × 20½ feet. I.H.P. 3375 = 14 kts. Own oil: 300 tons. Cylindrical boilers. Complement, 39. Deadweight capacity: 2000 tons.

Oilers (R.F.A.)—*continued.*

EBONOL. 1921 *Photo, Seward, Weymouth.*

BIRCHOL, BOXOL (Barclay, Curle), **EBONOL** (Clyde S.B. Co.), **ELDEROL, ELMOL** (Swan Hunter), **LARCHOL, LIMOL** (Lobnitz), **HICKOROL** (McMillan). All launched 1917. 2200 tons. Dimensions: 220 × 34⅜ × 13½ feet. Triple expansion engines and cylindrical boilers. I.H.P. 700 = 9 kts. Own oil: 40 tons. Complement, 19. Deadweight capacity: 1000 tons.

DISTOL (W. Dobson & Co.), **PHILOL, SCOTOL** (Tyne Iron S. B. Co.), **KIMMEROL, VISCOL** (Craig, Taylor). All launched 1916. 2200 tons. Dimensions: 220 × 34⅜ × 12¾ feet. I.H.P. 700=9 kts. Own oil: 40 tons. Cylindrical boilers. Complement, 19. Deadweight capacity: 1000 tons.

TREFOIL (Pembroke, 1913). 4500 tons. Dimensions: 280 × 39 × 18½ feet. 2 sets 6-cylinder 2-cycle Diesel engines. B.H.P. 1500=12 kts. Deadweight capacity: 2000 tons. Own oil: 200 tons.

1921 *Photo, Abrahams, Deconport.*

TURMOIL (Pembroke, 1917). 4484 tons. Similar to *Trefoil*, above, but with reciprocating engines. Draught: 22 feet. I.H.P. 1800.

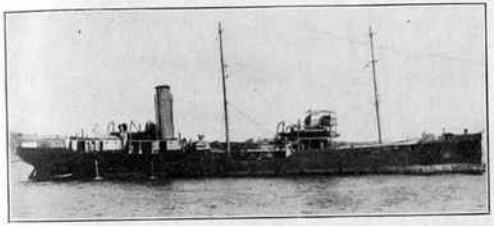
1920 *Photo, Coates, Harwich.*

MIXOL (Caledon S. B. & Eng. Co., 1916). **THERMOL** (Greenock D.Y. Co., 1916). 4326 tons. Dimensions: 270 × 38½ × 20½ feet. I.H.P. 1200 = 11 kts. Oil: 150 tons. Deadweight capacity: 2000 tons.

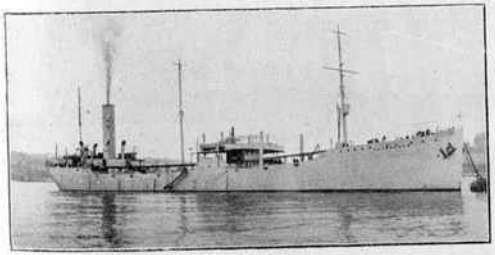
Oilers (R.F.A.)—*continued.*

CAROL. 1921 *Photo, Nercard, Weymouth.*

ATTENDANT (Chatham, 1913), **CAROL** (Devonport, 1913). 2178 tons. Dimensions: 200 × 34 × 13 feet. I.H.P. 450 = 8 kts. Coal: 60 tons. Deadweight capacity, 1000 tons.



BURMA (Greenock D.Y. Co., 1911). 4116 tons. Dimensions: 270 × 36½ × 18 feet. H.P. 1200 = 11 kts. Deadweight capacity, 2000 tons oil fuel. Own fuel: 210 tons.



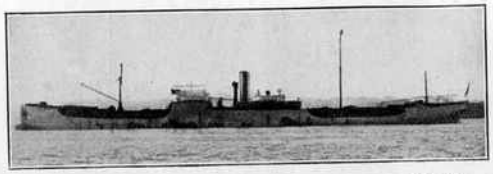
PETROLEUM. *Photo, Abrahams, Devonport (added 1927).*

PETROLEUM (Swan, Hunter, 1903). 9700 tons. Dimensions: 370 × 48⅔ × 24 feet. H.P. 2000 = 13 kts. Own oil: 426 tons. Deadweight capacity, 6000 tons.

KHARKI (Irvine S. B. & Eng. Co., 1900). 1465 tons. Dimensions: 185 × 29 × 12 feet. H.P 775 = 13 kts. Fuel: 90 tons. Deadweight capacity, 680 tons.

Note.—Oiler *Ruthenia* is now fuel storage hulk at Singapore.

Oilers (R.F.A.)—*continued.*

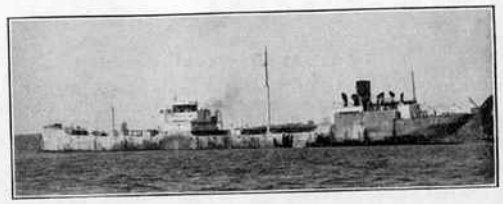


WAR BAHADUR. *Photo, Abrahams, Devonport (added 1927).*

WAR KRISHNA. *Photo, Abrahams, Devonport (added 1927).*

WAR AFRIDI (R. Duncan & Co., 1920), **WAR BAHADUR** (1918), **WAR MEHTAR** (1920), (both Armstrong); **WAR BRAHMIN** (1920), **WAR DIWAN** (1919), **WAR PINDARI** (1920), all three Lithgows; **WAR BHARATA** (1920), **WAR NAWAB** (1919), **WAR NIZAM** (1918), **WAR SUDRA** (1920), all four Palmers; **WAR HINDOO** (Hamilton, 1919); **WAR KRISHNA** (Swan Hunter, 1919); **WAR PATHAN** (1919), **WAR SIRDAR** (1920), both Sir J. Laing & Sons; **WAR SEPOY** (W. Gray & Co., 1919). 5518 to 5730 tons *gross*. Dimensions: 400 × 52¼ × 25⅔ feet. Deadweight capacities vary from 6300 tons (*War Pindari*) to 8100 tons (*War Bahadur*). Triple expansion engines and cylindrical boilers.

Oilers (R.F.A.)—*continued.*



BRITISH BEACON. *Photo, Abrahams, Devonport (added 1927).*

BRITISH BEACON, BRITISH LANTERN (both Workman Clark, 1918), **BRITISH STAR** (Swan Hunter, 1917). 6891, 6897 and 6888 tons *gross*, respectively. Dimensions: 430 × 57 × 26¼ feet. Deadweight capacity: 9000 tons. Triple expansion engines and cylindrical boilers.

BRITISH LIGHT (Palmers, 1917). 6470 tons *gross*. Dimensions: 419½ × 54½ × 26 feet. Deadweight capacity: 8000 tons. Triple expansion engines and cylindrical boilers.

DREDGOL (Simons, 1918). 7589 tons. Dimensions: 326 × 54½ × 18¾ feet. I.H.P. 2500 = 11 kts. Own oil: 360 tons. Cylindrical boilers. Deadweight capacity: 4000 tons.

Petrol Carriers.

PETROBUS. 1920 *Photo, G. Dott, Esq.*

PETROBUS, PETRELLA, (Dunlop, Bremner, 1918). 1024 tons. Dimensions: 164 × 28 × 11¼ feet. I.H.P. 500=9-10 kts. Deadweight capacity: 300 tons. Own oil: 50 tons. Cylindrical boilers. Complement, 16.

COMMONWEALTH OF AUSTRALIA.

ROYAL AUSTRALIAN NAVY. (*Officially revised* 1933)

Australian Naval Board.

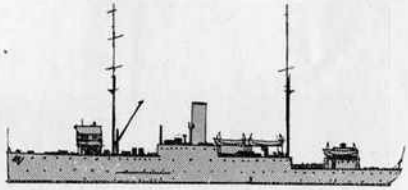
Commander-in-Chief: Rt. Hon. Sir Isaac A. Isaacs, P.C., G.C.M.G.
President: Minister of State for Defence, Senator The Rt. Hon. Sir Geo. F. Pearce, P.C., K.C.V.O.
1st. Naval Member: Rear-Admiral G. F. Hyde, C.V.O., C.B.E.
2nd Naval Member: Captain C. A. M. Sarel, O.B.E., R.N.
Finance and Civil Member: Mr. T. J. Thomas, O.B.E.
Secretary: Hon. Paymaster Commander G. L. Macandie, C.B.E.

Commanding Australian Squadron.

Rear-Admiral R. C. Dalglish, R.N.
Liason Officer, London: Pay Lt.-Commander A. J. White, R.A.N.

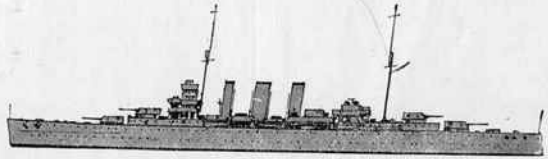
New Construction.

A programme of Naval Construction has been proposed which is to include four cruisers of the modified "Leander" Type.



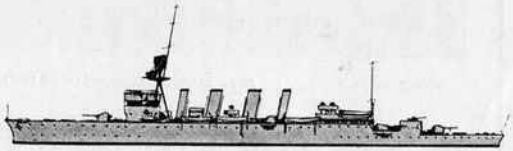
PENGUIN.

ALBATROSS.

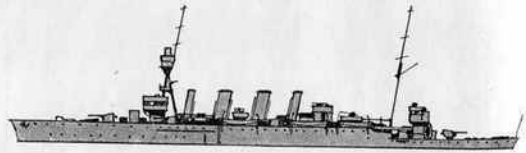


AUSTRALIA, CANBERRA.

STUART.



ADELAIDE.



BRISBANE.

"V" *class.*

TASMANIA *class* (5).

ANZAC.

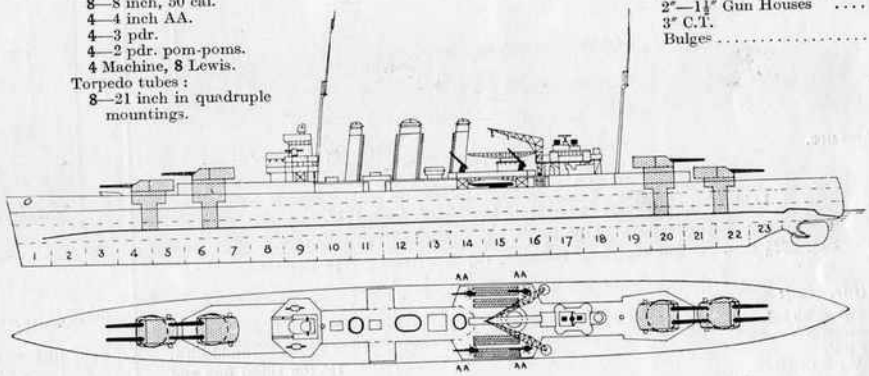
AUSTRALIA (17th March, 1927), **CANBERRA** (31st May, 1927).

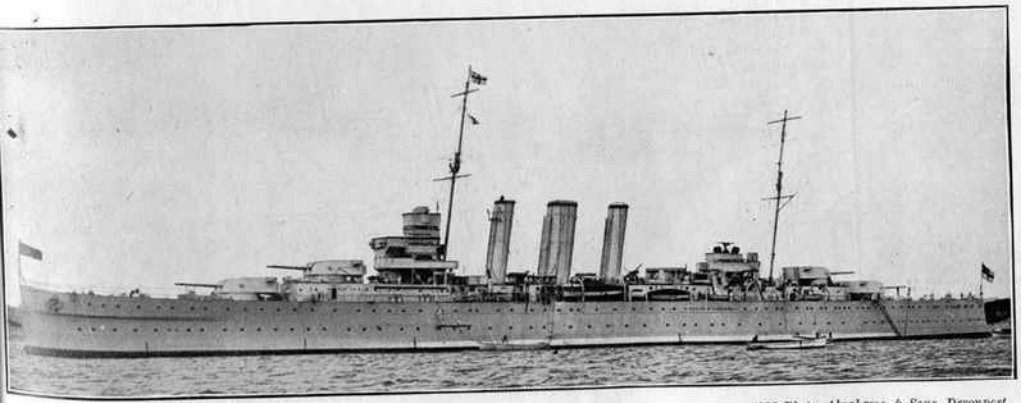
"Standard" displacement, 9,870 tons. (13,630 *deep load*). Complement, 679. (710 as flagship).

Length (*p.p.*) 596 feet, (*o.a.*) 630 feet. Beam, 68½ feet. Draught, 16¼ feet (*mean.*)

Guns :
8—8 inch, 50 cal.
4—4 inch AA.
4—3 pdr.
4—2 pdr. pom-poms.
4 Machine, 8 Lewis.
Torpedo tubes :
8—21 inch in quadruple mountings.

Armour :
4" Deck .....
2"—1½" Gun Houses ....
3" C.T.
Bulges .....



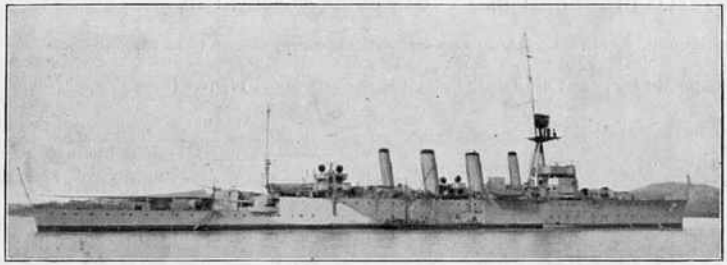


AUSTRALIA.

1928 *Photo, Abrahams & Sons, Devonport*

Machinery : Brown-Curtis geared turbines. 4 screws. Designed S.H.P. 80,000 = 31.5 kts. Boilers : 8 Yarrow. Oil fuel : 3400 tons. Radius at full speed, 2,300 miles ; at economical speed (11—14 kts.), 10,400 miles.

General Notes.—Sisters to *Kent* class, in British Navy Section. Designed by Sir E. H. Tennyson d'Eyncourt. Laid down by John Brown & Co., Ltd., Clydebank, in 1925, and completed in April and July, 1928, respectively. (See also detailed notes under British *Kent* class, which apply to these two ships.)



ADELAIDE. 1924 *Photo, W. W. Stewart, Esq.*

ADELAIDE (July, 1918).

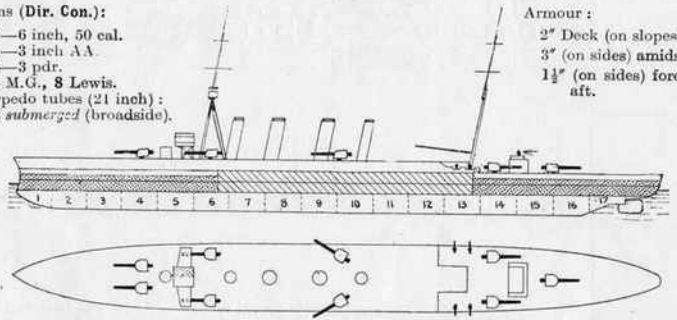
Laid down at Sydney, Jan., 1915. Completed, Aug., 1922.

Displacement, 5100 tons. Complement, 470.

Length (*o.a.*), 462⅜ feet. Beam, 49⅝ feet. Draught, 15⅝ feet (*mean*), 17¾—19 (*max.*).

Guns (**Dir. Con.**):
9—6 inch, 50 cal.
1—3 inch AA.
4—3 pdr.
2 M.G., **8** Lewis.
Torpedo tubes (21 inch):
2 *submerged* (broadside).

Armour:
2″ Deck (on slopes).
3″ (on sides) amidships.
1½″ (on sides) fore and aft.



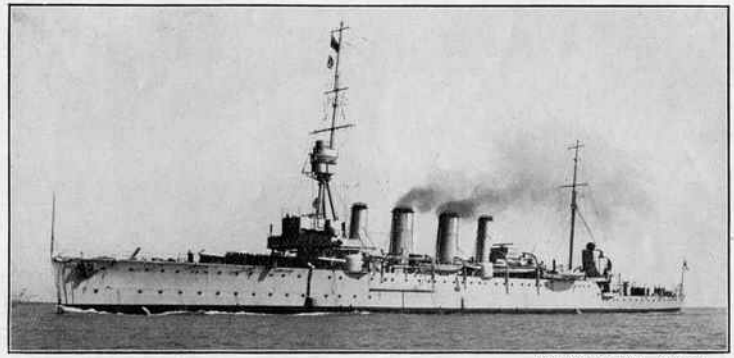
Ahead: **2** to **4**—6 in. Broadside, **5**—6 in., **1**—21 in. tube. Astern: **3** to **5**—6 in.

Machinery: Parsons turbines. Boilers: Yarrow, ½ oil, ½ coal burning. Designed S.H.P. 25,000=25 kts. Coal: *normal*, tons; *maximum*, 860 tons. Oil fuel: 550 tons. 2 screws.

Notes.—**Laid down at Cockatoo Navy Yard, Sydney, in 1915. Cost £1,271,782 to build.**

Gunnery Notes.—Electric Ammunition Hoists, dredger type. **Reported 6 inch guns have up to 40° elevation.**

Torpedo Notes.—7 Torpedoes carried. 4 Searchlights.



1926 *Photo, Cribb, Southsea.*

BRISBANE (30th Sept., 1915).

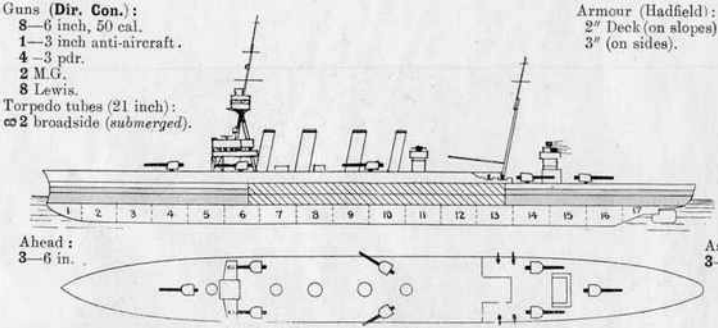
Laid down at Sydney, Jan., 1913. Completed Nov., 1916.

Displacement, 5120 tons. Complement, 391.

Length (*p.p.*), 430 feet. Beam, 49⅝ feet. { *Mean* draught, 15½ feet. / *Max.* „ 17¾–18½ feet. } Length (*over all*), 457 feet.

Guns (**Dir. Con.**):
8—6 inch, 50 cal.
1—3 inch anti-aircraft.
4—3 pdr.
2 M.G.
8 Lewis.
Torpedo tubes (21 inch):
2 broadside (*submerged*).

Armour (Hadfield):
2″ Deck (on slopes).
3″ (on sides).



Ahead: **3**—6 in. Astern: **3**—6 in.

Broadside: **5**—6 in., **1**—21 in. torpedo tube.

Machinery: Parsons turbine. 4 screws. Boilers: Yarrow. Designed H.P. 22,000 (*n.d.*), 25,000 *f.d.* = 25·5 kts. Coal: *normal*, 750 tons, *maximum*, 1196 coal+260 oil.

Gunnery Notes.—Electric ammunition hoists. *Torpedo Notes.*—7 torpedoes carried. 4 searchlights.

Armour Notes.—Internal protection by longitudinal and transverse bulkheads. Double bottom extends over magazine and machinery spaces.

Engineering Notes.—500 r.p.m.=full power. Boilers: 3 drum small tube type. Unifux condensers.

Note.—*Brisbane* refitted, 1926-28. Sister ships *Melbourne* and *Sydney* removed from effective list, 1928.

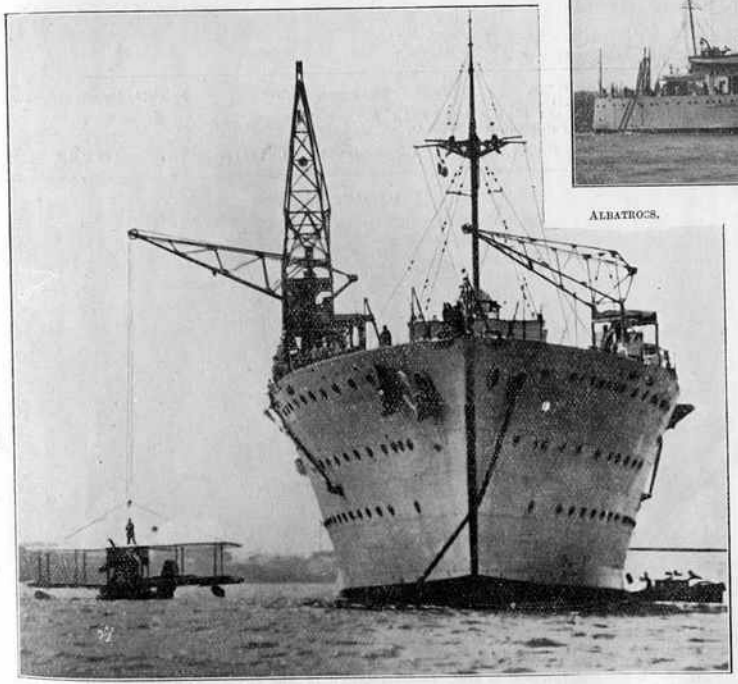
ALBATROSS (Feb. 21st, 1928).

Standard Displacement 5000 tons. Complement 450.

Length (*p.p.*) 422 ft., (*o.a.*) 443¾ ft.
Beam, 58 ft., (60⅞ ft. extreme). Draught, 16½ ft.

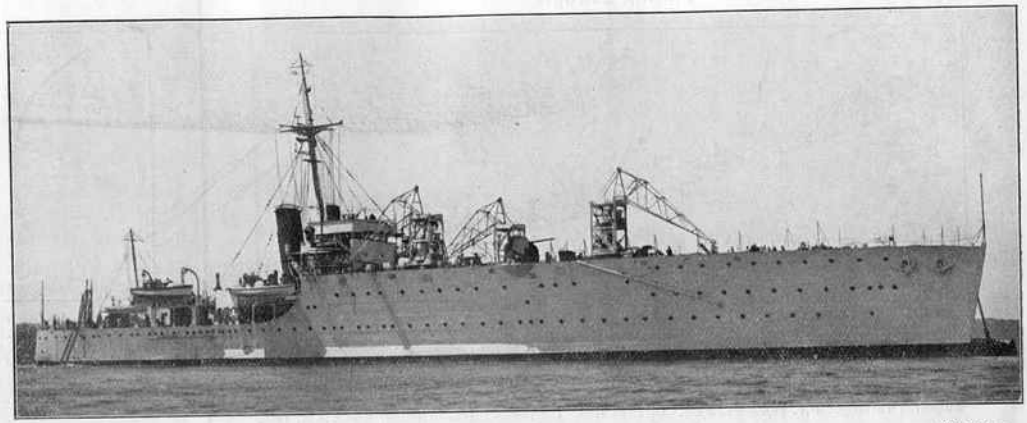
Guns:
4—4.7 inch AA.
2—2 pdr. pom-pom AA.

Accommodation for 9 seaplanes. (At present 6 Fairey machines are carried).



ALBATROSS.

1929 *Photo.*

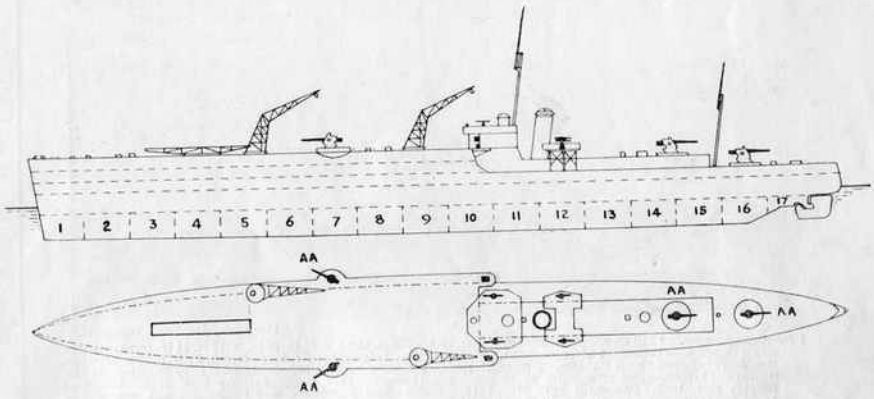


ALBATROSS.

1929 *Photo.*

Machinery: Parsons geared turbines. 2 screws. Designed H.P. 12,000 = 20 kts. Boilers: 4 Yarrow. Oil fuel 997 tons.

General Notes.—Laid down at Cockatoo Yard, Sydney, in April, 1926, and completed at end of 1928. Cost £1,200,000 complete with armament and equipment. Trials, Dec., 1928, gave 22.5 kts. *maximum* with 12,910 H.P.



Flotilla Leaders

Stuart (Hawthorn Leslie, 22/8/'18).
1,530 tons. Dimensions: 332·5 (*o.a.*)×31·7×12·6 feet.
Guns: 5—4·7", 1—3" AA., 7 smaller.
Tubes: 6—21".
All-geared Turbines. H.P. 40,000=36·5 kts. Oil: 504 tons. Complement, 183. Transferred to R.A.N. 1932.

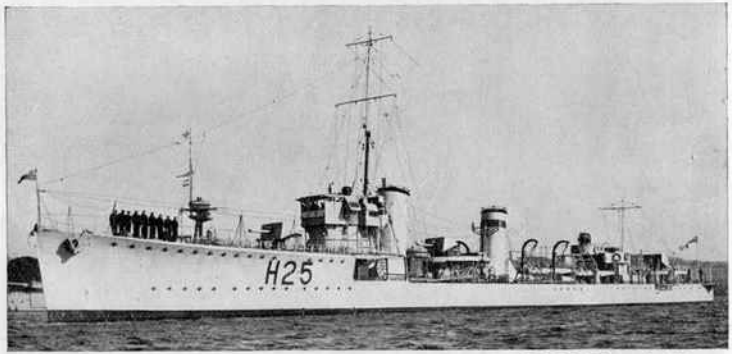
1920 *Photo, Abrahams, Devonport.*

1 *Denny:* ***Anzac.*** 1,310 tons. Dimensions: 315 ft. (*p.p.*), 325 ft. (*o.a.*) × 31 ft. 10 in. × 12 ft. 1¼ in. (*max.* draught aft). Guns: 4—4 inch, 2—2 pdr. pom-poms, 1 M.G., 4 Lewis. Torpedo tubes: 4—21 inch in 2 rev. deck mountings. Machinery: Brown-Curtis turbines. 3 screws. Boilers: Yarrow small tube. Designed S.H.P. 36,000 = 34 kts. Oil, 416/515 tons=*about* 2500 miles at 15 kts. Complement, 122. Begun January 31st, 1916. Launched January 11th, 1917. Completed April 24th, 1917. Begun under Emergency War Programme and presented to Australia, 1919. Sister to *Grenville* of British Navy.

4 "W" and "V" type.

Palmer: ***Waterhen.*** (3/'18), *Stephen:* ***Voyager.*** (5/'18), *Fairfield:* ***Vendetta.*** (9/'17),
White: ***Vampire.*** (5/'17).
1,100 tons. Dimensions: 312 (*o.a.*)×29·5×10·9 feet.
Guns: 4—4", 2—2 pdr. pom-poms, 4 M.G.
Tubes: 6—21".
All-geared Turbines. H.P. 27,000=34 kts. Complement: 134. Oil: 374 tons. Transferred to R.A.N. 1932.

5 "S" Type.

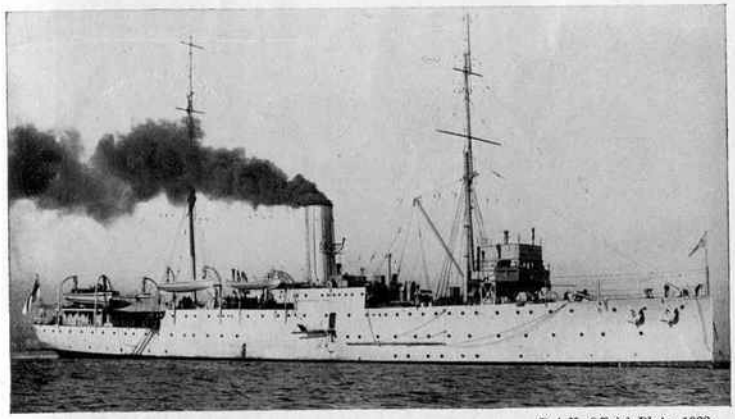


TASMANIA. *R.A.N. Official Photograph*, 1922.

2 *Beardmore:* ***Tasmania, Tattoo.*** 1 *Doxford:* ***Success.*** 1 *Scott:* ***Swordsman.***
1 *Swan Hunter:* ***Stalwart.***
905 tons. Dimensions: 265 (*p.p.*), 276 (*o.a., Success* 277) × 26¾ × 10⅞ feet (*mean*) draught. Armament: 3—4 inch (Mk. IV with 30° elevation DIR. CON.), 1—2 pdr. pom-pom, 1 M.G., 4 Lewis. 4—21 inch tubes in two twin deck mountings, 1—24 inch searchlight controlled in unison with guns. Machinery: Brown-Curtis all-geared turbines. 2 screws. Boilers: 3 Yarrow small tube. Designed S.H.P. 27,000 = 36 kts. Fuel (oil only): 254/301 tons = *about* 2900 miles at 15 kts. Complement, 90.

Notes.—Built under Emergency War Programme 1918-19 and presented to Australian Navy, 1919. For any further notes, refer to description of "Admiralty S Class" in British Navy Section.

Depot and Repair Ship.



R.A.N. Official Photo, 1922.

PENGUIN (ex-*Platypus*) (J. Brown, Clydebank. Begun Sept. 2nd, 1914; launched Oct. 28th, 1916; completed Mar., 1917.) 3455 tons. Dimensions: 310 (*w.l.*), 325 (*o.a.*) × 44 × 15¾ feet. (*max.* draught). Guns: *nil*. I.H.P. 2650 = 15½ kts. Two sets triple expansion reciprocating engines and 4 cylindrical return-tube boilers. 2 screws. Coal: 450 tons. Complement, 357. Serves as Destroyer Depot Ship and Fleet Repair Ship.

Surveying Vessel.

MORESBY (ex-*Silvio*, Barclay, Curle & Co., 1918). Ex-Minesweeper of "24" (*Racehorse*) class, converted by Pembroke D.Y., 1924-25. 1650 tons. Dimensions: 276½ (*o.a.*) × 35 × 12 feet. Guns: **1**—3 pdr. I.H.P. 2500 = 17 kts. Cylindrical boilers. Coal: 260 tons.

Miscellaneous.

CERBERUS (ex-*Kooranga*). Motor vessel. 61 tons. H.P. 200. 1 screw. Guns: **2**—4 inch, **2**—12 pdr., **4**—3 pdr. Serves as tender to Flinders Naval Depot, Waterport.

KURUMBA (Fleet Auxilliary).

BILOELA (Fleet Auxilliary).

ROYAL INDIAN MARINE.

Officially revised 1932.

Special Note.

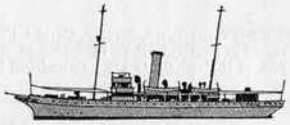
The Government of India has decided to complete the reconstruction of the R.I.M. in accordance with the recommendations of the Departmental Committee of 1925, but the force will not have the right to be called the Royal Indian Navy. It will, however, become a combatant force and will assume the functions and serve under the conditions which were originally intended for the Royal Indian Navy.

Flag Officer Commanding R.I.M. : Rear-Admiral H. T. Walwyn, C.B., D.S.O.

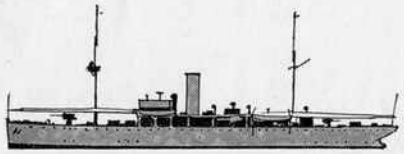
Flags.—Vessels of R.I.M., fly same Ensign and pendant as H.M. Ships. The Indian flag is flown as a Jack. Flag Officer when afloat flies broad red pennant, charged with a Cross in gold, and in first canton a lion rampant.

1932 Official Photos have been furnished by courtesy of the Flag Officer Commanding R.I.M.

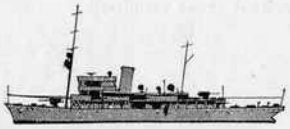
HINDUSTAN.



INVESTIGATOR.

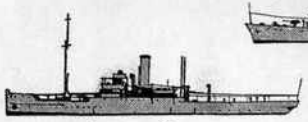


CORNWALLIS.



CLIVE.

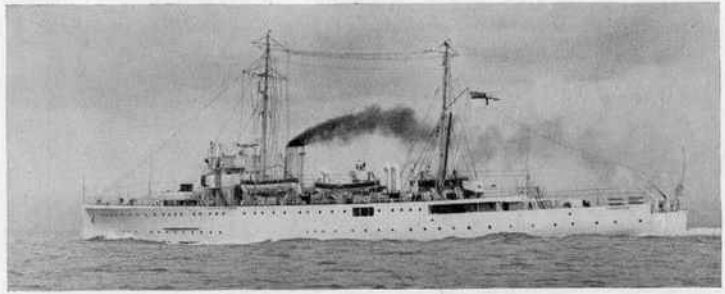
LAWRENCE.



BALUCHI PATHAN.

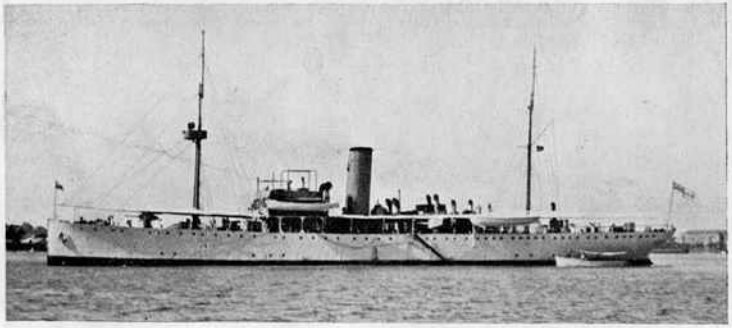
PALINURUS.

Sloops.



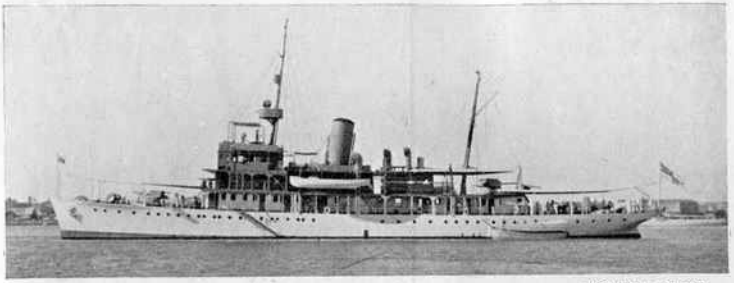
HINDUSTAN. 1930 *Photo, favour of Messrs. Swan Hunter.*

HINDUSTAN. Swan, Hunter & Wigham Richardson. Laid down 1929, launched May 12th, 1930 and completed trials in October 1930. Dimensions: 296 (*o.a.*) × 35 × 8½ft. Displ.: 1150 tons. Guns: 2—4 inch and 14 smaller. Machinery: Parsons impulse reaction Turbines with single reduction gearing: 2 screws. 2 3-drum W.T. Boilers: 250 lbs. pressure. S.H.P. 2000=16·5 kts. Oil: ? tons. The internal arrangements have been designed with special care, making the ship most suitable for the Tropics, and the ventilation has been very carefully planned. The refrigerating plant is of the electrically driven CO_2 type. Is a slightly enlarged edition of "Sandwich" class.
A second ship of this Type is building at Swan Hunter's. As yet unnamed.



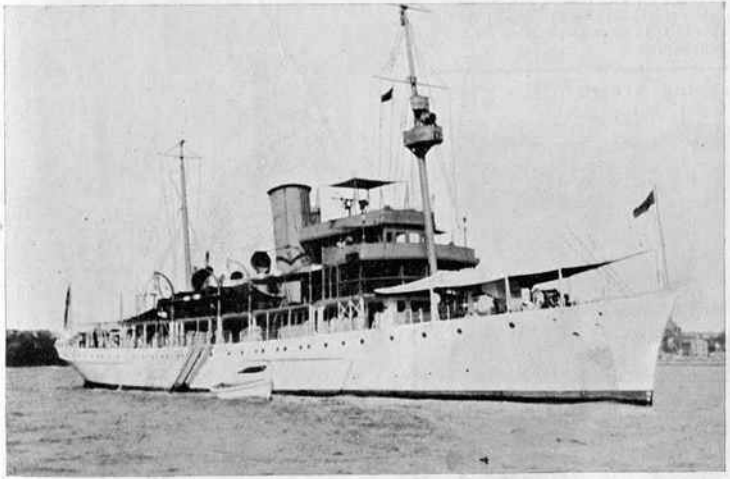
CORNWALLIS (ex *Lychnis*) Hamilton, August, 1917. Convoy Sloop of *Anchusa* series, 1290 tons. Dimensions: 255¼ (*p.p.*), 266¼ (*w.l.*), 277¾ (*o.a.*) × 35 × 14½ feet. Guns: 3—4 inch, 4—3 pdrs. 14 smaller. Machinery: 4-cyl. triple expansion vertical. Boilers: 2 cylindrical. 1 screw. Designed H.P. 2500 = 15 kts. Coal: 260 tons. Complement, 114.
Note.—Cornwallis sold to Indian Government by the Admiralty, September 1921. Sister ship *Elphinstone* wrecked, Jan. 1925.

Minesweeping Sloops.



1932 *Photo, Official.*

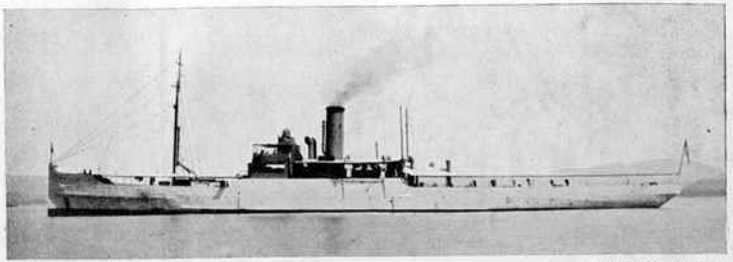
LAWRENCE (ex-*Despatch Vessel*, launched by Messrs. Beardmore, July 30th, 1919, completed December 27th, 1919). 1412 tons (1259 tons standard). Dimensions: 225 (*p.p.*), 248½ (*o.a.*) × 34 × 12 feet (*max.*) draught. Complement, 114. Guns: **2**—4 inch, **4**—3 pdrs.: **12** smaller. All-geared turbines. 2 screws. 2 Babcock boilers. S.H.P. 1900 = 15 kts. Oil: *normal*, 144 tons; *max.*, 153 tons.



1932 *Photo, Official.*

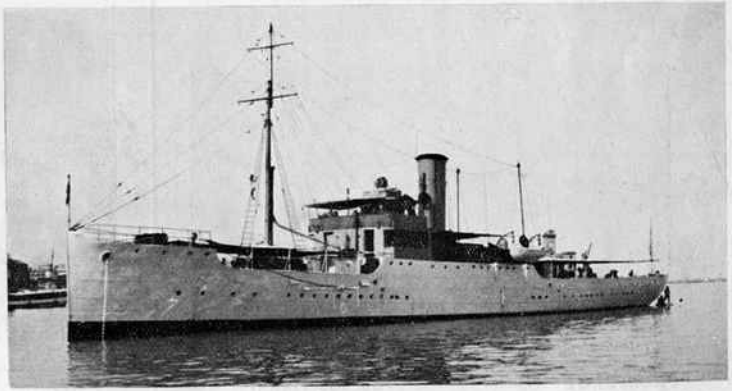
CLIVE (launched by Messrs. Beardmore, December 10th, 1919, completed April 20th, 1920). 2100 tons (2021 tons standard). Dimensions: 240 (*p.p.*), 270¾ (*o.a.*) × 38½ × 14 feet. Complement, 114. Guns: **2**—4 inch, **4**—3 pdrs. **12** smaller. All-geared turbines. 2 screws. 2 Babcock & Wilcox boilers. S.H.P. 1700 = 14½ kts. Oil: 179 tons *normal*, and 199 tons *max.*

Patrol Vessels.



BALUCHI. 1932 *Photo, Official.*

BALUCHI (ex P.C 55). Barclay, Curle. (1917). 755 tons (682 tons standard). Dimensions: 248½ × 25½ × 9½ feet. Turbines: S.H.P., 3500 = 20 kts. Oil, 134 tons. Guns: **1**—4 in., **2**—12 pdrs. Complement, 64.

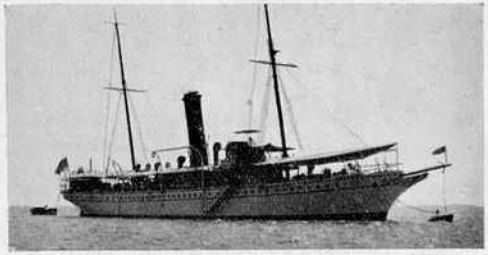


PATHAN. 1932 *Photo, Official.*

PATHAN (ex P.C. 69). Workman, Clark. (1918). 832 tons (695 tons standard). Dimensions: 247½ × 26¾ × 9 feet. Turbines: S.H.P. 3500=20 kts. Oil, 164 tons. Guns: **1**—4 in., **2**—12 pdrs. Complement, 64.

MISCELLANEOUS.

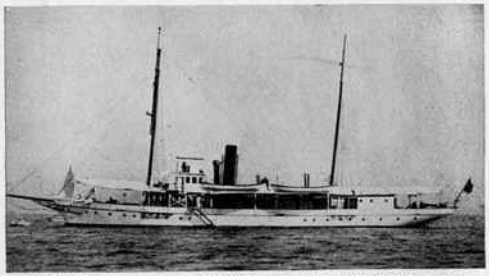
Surveying Ships.



1921 *Photo, Mr. Pallett, Chief Writer, R.N.*

INVESTIGATOR (Vickers, 1907). 1355 tons. (1172 tons standard). Dimensions: 204 × 33 × 13 feet. I.H.P. 1550 = 13 kts. 1 set triple expansion engines and 1 M-Return tube boiler. Coal: 172 tons. No guns. Complement, 110.

Note.—Length given above is between perpendiculars. Overall length is 232½ or with bowsprit, 241½ feet.



PALINURUS. 1921 *Photo, Mr. Pallett, Chief Writer, R.N.*

PALINURUS (Cammell Laird, 1907). 538 tons (444 tons standard). Dimensions: 140 × 24 × 10 feet (*max.* draught). 1 set triple expansion engines. 1 M-Return tube boiler. I.H.P. 475 = 11 kts. Coal: 64 tons. No guns. Complement, 50. No longer on effective list.

Depot Ship.

1932 *Photo, Official.*

DALHOUSIE (Greenock, 1886). 1960 tons. Dimensions: 239½ × 36 × 15⅝ feet. (Machinery removed.) Guns: 4—3 pdr., 1—2 pdr. pom-pom. Fitted out as Depot Ship for the Royal Indian Navy, at Bombay.

Minesweeping Trawler.

1932 *Photo, Official.*

MADRAS.

(1918-19). 588 tons. H.P. 480 = 10 kts. Guns: 1—12 pdr. Coal fuel.

Similar vessels *Bombay, Calcutta, Colombo, Kennery, Kidderpore, Sealdah,* no longer on effective list.

Trawler (used as Lighthouse Tender).

SALSETTE. Similar to *Madras.* No armament at present.

NEWFOUNDLAND.

Transport.

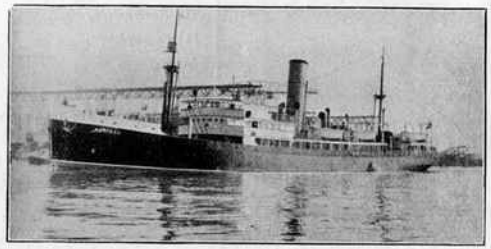


Photo added 1929 by courtesy of Builders.

CARIBOU (Nieuwe Waterweg Scheepsbouw Maatschappij, Rotterdam, 1925). 2222 tons *gross*. Dimensions: 266 × 41¼ × 18¼ feet draught. Armament nil. I.H.P. 2800 = 14 kts. Machinery: Triple expansion. 1 screw. 2 S.E. boilers, working pressure 200 lbs. Coal: 411 tons. Complement, 51. Accommodation also provided for 243 passengers or troops. Strengthened for ice navigation.

14 Patrol Vessels, etc.

(Under control of Ministry of Finance and Customs.)

KYLE (Swan, Hunter, 1913). 1055 tons *gross*. Dimensions: 220 × 32½ × 17¾ feet.

PORTIA, PROSPERO (1904). 978 tons *gross*. Dimensions: 204⅔ × 31½ × 16 feet.

MEIGLE (ex-*Solway*, 1881). 836 tons *gross*. Dimensions: 220 × 30 × — feet.

SAGONA (1912). 808 tons *gross*. Dimensions: 175 × 28¼ × 13½ feet.

GLENCOE (1899). 767 tons *gross*. Dimensions: 208 × 30 × 17 feet.

ARGYLE, CLYDE, HOME (1900). 439 tons *gross*. Dimensions: 154½ × 25 × 14 feet.

MALAKOFF, SEBASTOPOL, SENEFF (1918). Ex-patrol boats of French "Victoire" type. 784 tons.

PRIESTMAN (1910). Steam grab hopper. 291 tons *gross*.

DAISY (1912). 248 tons *gross*. (Displacement, 510 tons.)

DOMINION OF CANADA.

Officially Revised 1932.

Chief of the Naval Staff under Minister of National Defence: Commodore Walter Hose, C.B.E., R.C.N.

Personnel: R.C.N., Officers, 70; Men, 500. R.C.N.R., 70 and 430 R.C.N.V.R., 70 and 830. *Uniforms*: As British Navy.

RECOGNITION SILHOUETTES.

Scale: 1 inch = 160 feet.

Government Vessels:—

ARLEUX *class*

MALASPINA.

CARTIER.

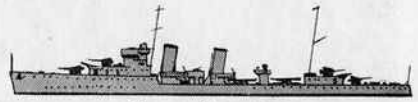
ACADIA.

MONTCALM.

Royal Canadian Navy.

LADY GREY.

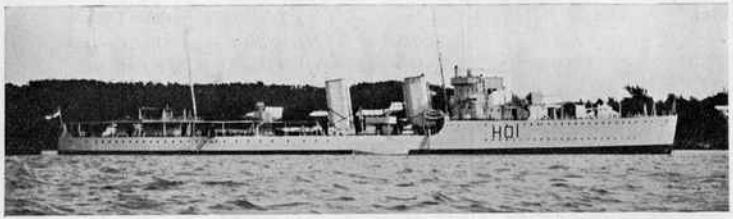
ARMENTIERES *class* (4).



SKEENA, SAGUENAY.

CHAMPLAIN, VANCOUVER.

2 "Skeena" class.

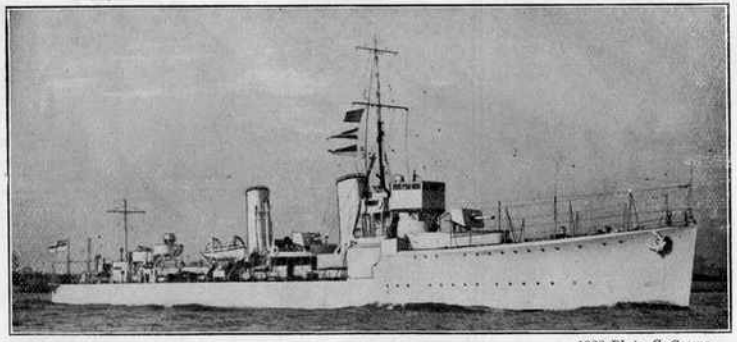


SKEENA. 1932 *Photo, D. Trimingham, Esq.*

SAGUENAY (July 12, 1930) and **SKEENA** (October 10, 1930), were ordered in January, 1929, from Messrs. Thornycroft. Cost about £670,000, with armament. Displacement, 1320 tons. Dimensions: 322 × 32½ × 12 feet. H.P. 34,000 = 35 kts. Machinery: Single reduction geared turbines. 3 Thornycroft boilers, with superheaters. Oil fuel: 380 tons. Complement, 138.

These ships exceeded 37 knots on trials with ease, and their running was marked by almost complete absence of vibration. Similar to British A class, but specially strengthened to withstand ice pressure.

2 Thornycroft "S" class.



CHAMPLAIN. 1928 *Photo, C. Cozens.*

2 *Thornycroft* "S." **CHAMPLAIN** (*ex-Torbay*), **VANCOUVER** (*ex-Torcador*). 1075 tons. Dimensions: 266½ (*p.p.*) 275½ (*o.a.*) × 27 ft. 5½ in. × 11 feet. Guns: **3**—4 inch, **1**—2 pdr. pom-pom, **1** M.G., **4** Lewis; Torpedo tubes: **4**—21 inch in two twin deck mountings. Machinery: Brown-Curtis turbines and 3 Yarrow boilers (built by Thornycroft). 2 screws. S.H.P. 29,000 = 36 kts. Oil: 306/248 tons. Complement, 90. Transferred to Canada 1928, to replace worn-out *Patriot* and *Patrician*, and are employed for Training R.C.N.V.R. on Atlantic and Pacific Coasts respectively.

		Begun	*Launch.*	*Comp.*	*Trials*	
Champlain ...	...	11/17	6/3/19	17/7/19		36·4
Vancouver ...	...	11/17	7/12/18	4/19		

3 Minesweeping Trawlers.

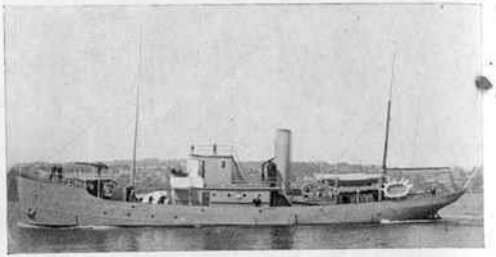
(A = Atlantic, P = Pacific.)

(P) ***Armentieres,***

(A) ***Festubert,***

(A) ***Ypres,***

Steel. Built 1918.
357 tons gross, 136 tons net register.
Dimensions: 130 × 25 × 14 feet.
Guns: **1**—12 pdr., Q.F. 12 cwt.
Speed: 10 kts. Complement, 18.



YPRES. 1932 *Photo, Official.*

Department of Marine and Fisheries.

With the exception of *Malaspina*, all guns dismounted and removed to store.

Services ships were engaged on, 1924, are abbreviated thus:—

FP-A:—Fisheries Protection, Atlantic. **FP-P:**—Fisheries Protection, Pacific.
HS-A:—Hydrographic Survey, Atlantic. **HS-P:**—Hydrographic Survey, Pacific.
HS-GL:—Hydrographic Survey, Great Lakes.

ACADIA (1913). Steel 439 tons (net registered). Dimensions: 170 × 33.7 × 19.1 feet. H.P. 1200 = 12 kts. Guns: **1**—4 inch Q.F., **2**—12 pdr. Q.F. 12 cwt. Coal: 260 tons. Complement, 42. (**HS-A.**)

ARANMORE (1890). Iron. 502 tons (net registered). Dimensions: 241.5 × 34.8 × 15.7 feet. H.P. 1500 = 13 kts. Coal: 200 tons.

ARLEUX (**FP-A**), **ARRAS** (**FP-P**). Steel trawlers, both built 1918. 136 tons net. Dimensions: 130 × 25 × 13 feet. Guns: **1**—12 pdr. Q.F. 12 cwt. Speed: 10 kts. Complement, 18.

BAYFIELD (1889). Steel. 114 tons net. Dimensions: 140 × 24 × 10.5 feet. Speed: 11 kts. Coal: 100 tons. Complement, 25. (**HS-GL.**)

BELLECHASSE (1912). 216 tons net. Dimensions: 142.2 × 27 × 12 feet. H.P. 1000 = 15 kts. Coal: 24 tons.

BRADBURY (1915). Steel. 500 tons. Dimensions: 151 × 27¼ × 8 feet. Speed: kts. Complement, 13. (*Fisheries Patrol, Lake Winnipeg*).

CARTIER (1910). Steel. 234 tons net. Dimensions: 164 × 29 × 13 feet. Guns: **3**—12 pdr. 12 cwt. Q.F. H.P. 830 = 12 kts. Coal: 150 tons. Complement, 34. (**HS-A.**)

DOLLARD (1913). Steel. 323 tons (net registered). Dimensions: 178 × 31.9 × 15.3 feet. H.P. 1000 = 11 kts. Coal: 100 tons.

DRUID (1902). 193 tons net. Dimensions: 160 × 30 × 12.5 feet. H.P. 800 = 13 kts. Coal: 100 tons.

ESTEVAN (1912). 607 tons net. Dimensions: 212 × 38 × 15.3 feet. H.P. 1500 = 12½ kts. Coal: 350 tons.

FISPA (1913). 25 tons net. Dimensions: 82 × 14 × 5¾ feet. Complement, 7.

Government Vessels *(continued)*.

Department of Marine and Fisheries (continued):—

GIVENCHY (**FP-P**). Steel trawler, built 1918. 136 tons net. Dimensions: 130 × 25 × 14 feet. Guns: 1—12 pdr. Q.F. 12 cwt. Speed: 10 kts. Complement, 18.

GRENVILLE (1915). 232 tons *net*. Dimensions: 155 × 30.9 × 10.9 feet. H.P. 900 = 11.5 kts. Coal: 100 tons.

GULNARE (1893). Steel. 1 screw. 500 tons. Dimensions: 137 × 20.5 × 12 feet. Speed: 10 kts. Coal: 65 tons. Complement, 34. *(Tidal Survey—Atlantic.)*

LADY GREY (1906). 439 tons *net*. Dimensions: 170 × 32 × 15.9 feet. H.P. 2300 = 14 kts. Coal: 200 tons.

LADY LAURIER (1902). 1970 tons. Dimensions: 214.9 × 34.2 × 17.2 feet. H.P. 1800 = 13 kts. Coal: 175 tons.

LAURENTIAN. 155 tons *net*. Dimensions: 149 × 24 × 11 feet. H.P. 520 = 11 kts.

LILLOOET (1908). Steel. 760 tons. Dimensions: 163 × 27 × 13 feet. H.P. 900 = 11¾ kts. Coal: 140 tons. (**HS–P.**)

LOOS (**FP-A.**). Steel trawler, built 1918. 136 tons *net*. Dimensions: 130 × 25 × 14 feet. Guns: 1—12 pdr. Q.F., 12 cwt. Speed: 10 kts. Complement, 18.

MALASPINA (1913). Steel. 1 screw. 850 tons. Dimensions: 160 × 26.5 × 14.5 feet. Guns: 1—6 pdr. Q.F. Hotchkiss. H.P. 1350 = 14½ kts. Coal: 200 tons. Complement, 40 (**FP–P.**)

MARFISH (1912). 83.4 × 18.5 × 9 feet. Gross tonnage, 115.76. Registered tonnage, 78.72. N.H.P., 19.5. Complement, 7.

MONTCALM (1904). Steel. 586 tons *net*. Dimensions: 245 × 40.6 × 15.7 feet. H.P. 3600 = 14 kts. Coal: 425 tons.

NEWINGTON (1889). 76 tons *net*. Dimensions: 115.3 × 21 × 11.5 feet. H.P. 600 = 10 kts. Coal: 85 tons.

RESTLESS (1906). Wood. 205 tons. Dimensions: 271 × 17 × 9 feet. Speed: 8½ kts. Complement, 8. (**HS-P.**)

STANLEY (1888). 395 tons *net*. Dimensions: 207.8 × 32 × 17.9 feet. H.P. 300 = 15½ kts. Coal: 250 tons.

Department of Customs:—

MARGARET (Thornycroft, 1913). 950 tons. Guns: 2—6 pdr. Designed H.P. 2000 = 15¼ kts. *max*. speed. Coal: 200 tons. Strengthened for ice navigation.

Note.—A new 17 kt. vessel of this type was ordered from Canadian Vickers Ltd., August, 1928.

UNION OF SOUTH AFRICA.

Officer Commanding South African Naval Service (under Department of Defence): Commander R. F. U. P. Fitzgerald, R.N.

Minesweeping Trawlers.

Immortelle (ex-*Eden*) (ex-*Thomas Johns*)
Sonneblom (ex-*Foyle*) (ex-*John Edmund*)

Both launched 1918. "Mersey type," taken over from H.M. Navy, 1921. 325 tons. *gross*. Dimensions: 138½ × 23½ × 12¾ feet. Speed: 10.5 kts.

Oceangoing Tugs.

T. S. McEwen (Bow, McLachlan & Co., Ltd., Paisley, 1925). 793 tons *gross*. Dimensions: 160 × 34½ × 15⅝ feet. H.P. 3400 = 15 kts. Watertube boilers. 2 screws.

Sir David Hunter (Ferguson Bros., Port Glasgow, 1915). 621 tons *gross*. Dimensions. 160 × 32 × 15 feet. H.P. 2300 = 13 kts. 2 screws.

(Some smaller Tugs also exist.)

A surveying ship *Africana* is also listed but no details are available. She replaces *Protea*, which has been put out of commission.

DOMINION OF NEW ZEALAND.

Naval Board.

President: The Minister of Defence, the Hon. Thos. M. Wilford.

First Naval Member: Commodore Geoffrey Blake, C.B., D.S.O., R.N.

Second Naval Member and Chief Staff Officer*: Captain J. S. G. Fraser, D.S.O., R.N.

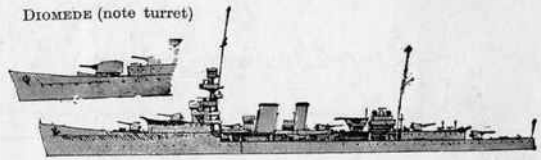
Naval Secretary†: Paymaster Commander J. T. V. Webster, D.S.O., R.N.

*Until such time as Commodore vacates command of H.M.S. *Dunedin* or other ship relieving her.

†Secretary to Commodore is also Secretary to Naval Board.

RECOGNITION SILHOUETTES.

DIOMEDE (note turret)



DUNEDIN.

NUCULA.

DIOMEDE. (Note forward gunhouse.) (Now has gaff on mainmast instead of foremast and a 4" on blast screen aft.) *Photo added 1923.*

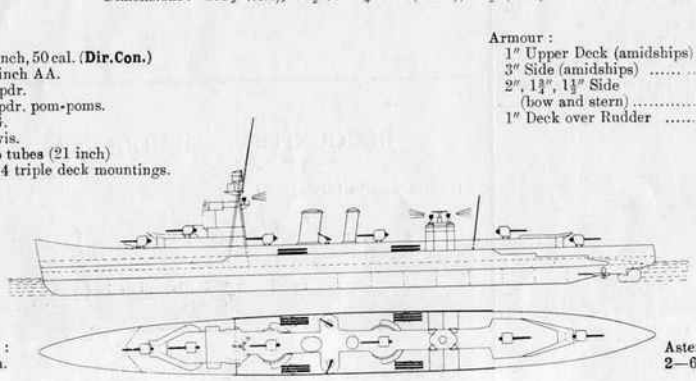
DIOMEDE (29th April, 1919). **DUNEDIN** (19th Nov., 1918).

Displacement: 4765 and 4650 tons respectively. Complement: 450/469.

Dimensions: 472½ (*o.a.*), 46½ × 14¼ feet (*mean*), 16½ (*max*).

Guns:
6—6 inch, 50 cal. (**Dir.Con.**)
3—4 inch AA.
4—3 pdr.
2—2 pdr. pom-poms.
2 M.G.
8 Lewis.
Torpedo tubes (21 inch)
12 in 4 triple deck mountings.

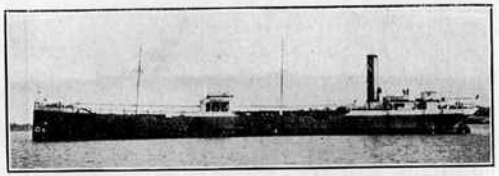
Armour:
1" Upper Deck (amidships) ...
3" Side (amidships) .....
2", 1¾", 1½" Side (bow and stern) .....
1" Deck over Rudder .....



Ahead: 2—6in. Astern: 2—6 in.

Machinery: *Diomede* has Parsons and *Dunedin* Brown-Curtis geared turbines. Yarrow boilers in both. Designed S.H.P. 40,000 = 29 kts. *Trials:* 41,268 = 29.19. Oil fuel: *normal*, 300 tons; *max.*, 1060 tons. Begun under Emergency War Programme, *Diomede* by Vickers, June, 1918, and *Dunedin* by Armstrong, Nov., 1917, and completed 24th April, 1922, by Portsmouth D.Y., and Oct., 1919, respectively. Machinery by Vickers and Hawthorn, respectively. Transferred to New Zealand, 1924—25.

Oiler.



NUCULA. 1927 *Photo, Nautical Photo Agency.*

NUCULA (ex-*Soyo Maru*, ex-*Hermione*) (Armstrong, 1906). 4614 tons *gross*. Dimensions: 370 × 48½ × 24¼ feet. I.H.P. 2400 = 10.5 kts. Deadweight capacity: 6000 tons.

DUNEDIN. 1921 *Photo, Seward.*

Training Ship (ex-Cruiser).

PHILOMEL (Aug., 1890). 2575 tons. Complement, 222. Dimensions (*o.a.*): 278×41×16¾ (*max.*) feet. Armament: 1—6 inch, 1—4 inch, 2—12 pdr. Torpedo Tubes: Nil. Armour: 2½" Deck. Designed H.P. 7500 = 19 kts. (*f.d.*). Coal: 450 tons. Serves as Training and Depot Ship at Auckland.

Minesweeping Trawler.

WAKAKURA (ex-*T.R.*1). "Castle" type, similar to ROBERT CLOUGHTON, in British Navy section.

Fleet Tug.

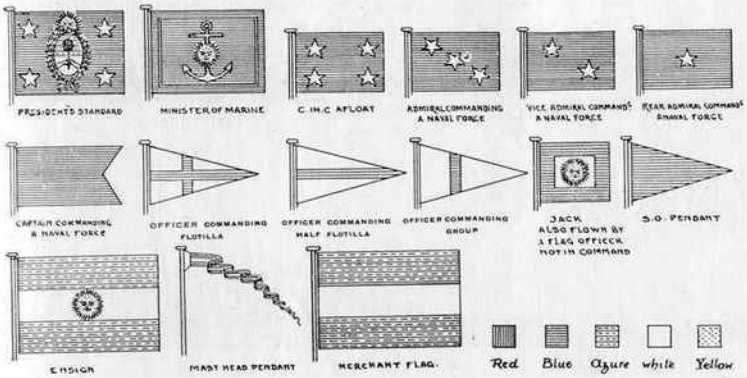
TOIA (ex-*St. Boniface*, ex-*St. Fergus*). Details as "Saint" class, at end of British Navy Section.

Note.—Sloops **LABURNUM** and **VERONICA** are under control of the Admiralty while on this station for duty in the islands of the S. Pacific.

ARGENTINA.

Revised by courtesy of the Ministry of Marine, 1933.

Flags.



Notation.	Nominal Calibre. inches.	Nominal Calibre. c/m.	Maker.	Length in Calibres.	Muzzle Velocity.	Weight A.P. Projectile.	Max. penetration against K.C. with capped A.P. at 5000 yards.	Max. penetration against K.C. with capped A.P. at 3000 yards.
	inches.	c/m.		calibres.	ft. secs.	lbs.	inches.	inches.
Heavy	12	*30·5*	B	50	2900	870	19	23
Medium	10	*25·4*	A	40	2207	500	7	9½
	9·4	*24*	K	35	2300 / 2133	352	4½	6
	8	*20·3*	A	45	2660	210	6½	9
	8	*20·3*	A	40	2550	210	3	5
	7·5	*19*	A	52	3116	200	...	...
Light	6	*15*	B	50	2600	105	...	8¼
	6	*15*	A	45	2500	100	3	4¼
	6	*15*	A	40	2200	100	3	3¾
	4·7	*12*	A	45	2570	45	...	2¾
	4·7	*12*	A	40	2230	45	...	...
	4	*10·16*	B	50	2996	30	...	...

In the Maker's column A = Armstrong; B = Bethlehem; K = Krupp.
The above details of Argentine Naval Ordnance have been officially revised.

Insignia of Rank.

Note :—Coloured velvet cloth between sleeve as follows :—

Engineers : Sky Blue.
Surgeons : Red.
Paymasters : White.

Talleres de Marina.

TALLER DE MARINA (Dársena Norte). Dry docks: (Eastern) 590½ × 65½ × 25 feet, and (Western) 492 × 65½ × 25 feet. There is also a small private dock at San Fernando, 17 miles above the city.

Arsenals.

PUERTO BELGRANO (Bahia Blanca). Dry docks: (1) 657 × 84 × 32½ ft., (2) 683 × 114 × 43 ft.
RIO SANTIAGO. Dock, 672 × 114 × 36 feet. Two floating docks: (1) 1500 tons lift; (2) 300 tons lift.

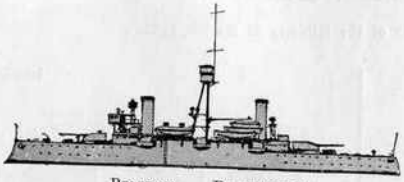
Mercantile Marine.

(From "Lloyd's Register," 1932 figures.)
305 vessels of 318,191 tons, gross tonnage.

General Notes.

Personnel: about 12,000 all ranks. *Reserve*: about 4,500. *Special reserve*: 18,000 conscripts.
Minister of Marine: Contraalmirante Pedro S. Casal.
Chief of Naval Staff: Capitán de Navio León L. Scasso.
Chief of Naval Commission (Europe): Capitán de Fragata Juan F. Chihigaren.
Naval Attaché (London):

INDEPENDENCIA. LIBERTAD.

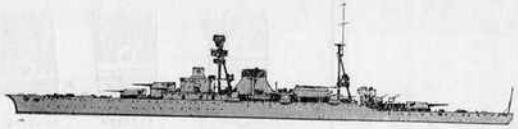


BELGRANO. PUEYRREDON.
SAN MARTIN.

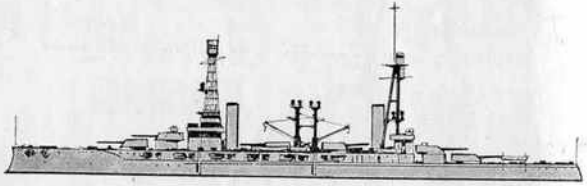
GARIBALDI.

PARANA. ROSARIO.

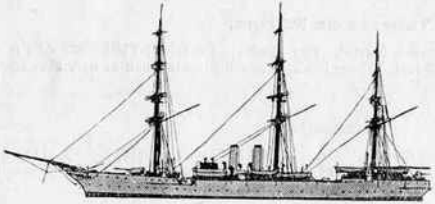
SAN JUAN.
SAN LUIS.



ALMIRANTE BROWN.
25 DE MAYO.



MORENO.
RIVADAVIA.

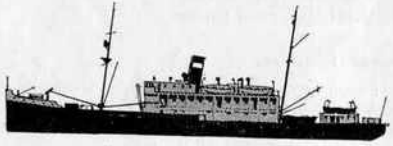


PRESIDENTE SARMIENTO.

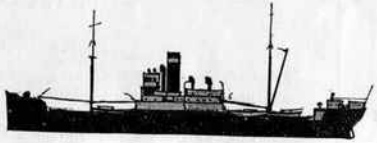
CORDOBA. CATAMARCA.
LA PLATA. JUJUY. } t.b.d.

5 MENDOZA *Class.*

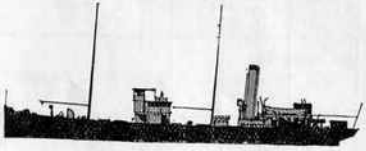
M 1—9



CHACO. PAMPA.



AMERICA.



MINISTRO EZCURRA.

SANTA FÉ *Class.* (3).

RIVADAVIA (26 Aug., 1911) & **MORENO** (23 Sept., 1911).

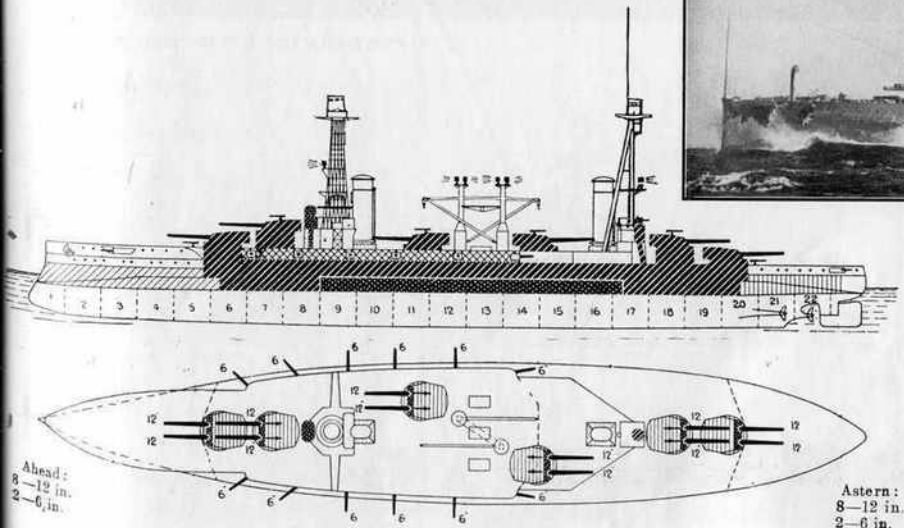
Normal displacement, 27,940 tons. *Full load*, 30,600 tons. Complement, 1215.

Length (*w.l.*), 577½ feet. Beam, 95 feet. *Max.* load draught, 28 feet. Length (*over all*), 585 feet.

Guns (Bethlehem):
12—12 inch, 50 cal. } **Dir.**
12—6 inch, 50 cal. } **Con.**
4—3 inch AA.
4—3 pdr.
6 M.G.
(4 landing).
Torpedo tubes (21 inch):
2 *submerged* (broadside).

Armour (Krupp):
11″—8″ Belt (amidships)
5″ Belt (bow) N.C.
4″ Belt (stern) N.C.
3″ Deck (slopes)
9″—8″ Side above belt..
12″—9″ Big gun turrets ..
6″ Secondary battery (N.C.)
12″ Conning Tower (forward)
9″ Do. (aft.)
Total weight: 7600 tons.

Machinery: Curtis geared turbines. 3 screws. S.H.P. 45,000 = 23 kts.
Boilers: 18 Babcock (converted to oil burning, 1924-25). Oil: 3,600 tons
Nominal radius: 3930 miles at full speed, 8500 miles at 10 kts.



Ahead:
8—12 in.
2—6 in.

Astern:
8—12 in.
2—6 in.

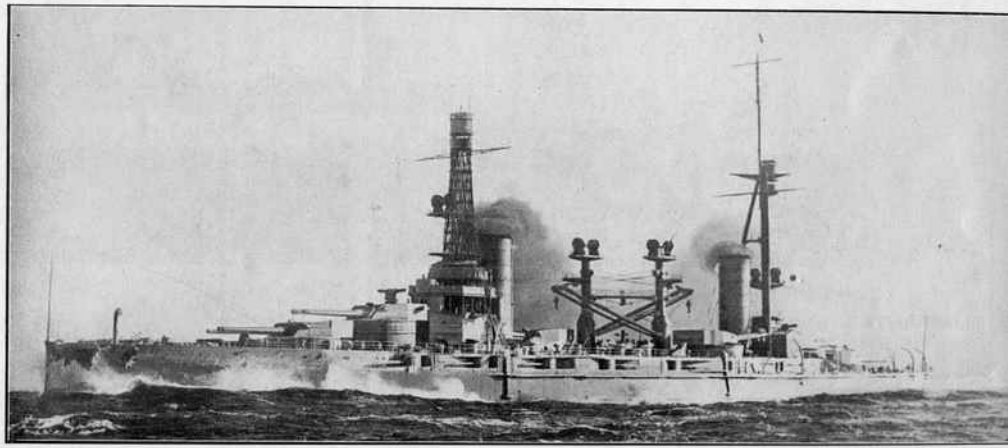
Broadside: **12**—12 in., **6**—6 in.

New Construction.

The current Naval Programme, approved by Parliament in Sept., 1926, involves the expenditure of 75,000,000 gold pesos (£15,000,000) over the ten years 1927-1936. In addition to the extension of present dockyard facilities on the River Plate and at Puerto Belgrano, and the opening of a new yard at Mar del Plata, the construction of the following vessels to replace obsolete tonnage is provided for:—

3 Cruisers.
6 Flotilla Leaders.
6 Submarines.
1 Aircraft Tender.
2 Surveying Vessels.

These ships are to absorb over £5,000,000 of the sum voted.



1926 *Photo, Fore River Yard (Builders).*

Gunnery Notes.—Heights of barbettes over normal draught w.l.: No. 1, 29½ feet; No. 2, 37½ feet; Nos. 3 and 4 (echelon), and No. 5, 29 feet; No. 6, 20 feet; 6 inch guns, 19½ feet above w.l. Arcs of fire: end barbettes, Nos. 1 and 6, 270°; Nos. 2 and 5 (super-firing), 300°; Nos. 3 and 4 (echelon) 180° own beam and 100° far beam. R.F. on heads of derrick posts. Director controls (U.S.) type installed during 1924—25 refits. Rates of fire are reported to be: 12 inch, 2 rounds a minute; 6 inch, 8; 4 inch, 12.

Armour Notes.—Main belt is 8 feet deep, 4½ feet above water-line and 3½ feet below same at normal draught. It is 240 feet long, but 11″ section is only 2 feet deep from top edge of belt, and then tapers to 5″ on lower (under-water) edge. Belt under end barbettes is 10″ tapering to 5″ as main belt. Upper belt 400 feet long, 9″ lower edge, 8″ top edge, 6″ battery above this. Funnel bases, 1½″ nickel steel for 15 feet above deck. Protective decks, 1½″ upper, 3″ lower. Two Director stations behind upper belt at bases of C.T. communication tubes. Barbettes: bases are 9″ where exposed. Shields to these: 12″ port-plate, 9″ sides, 11″ back, 3″ roof.

Anti-Torpedo Defence.—3″ longitudinal wing bulkheads in way of machinery and magazine spaces. ¾″ nickel steel flats under magazines, boilers, and engine rooms. Total weight, 680 tons (included in 7,600 tons total weight of armour given above). 12—38-inch searchlights.

General Notes.—Built under 1908 Programme. Large refits in U.S.A., 1924—25.

Electric Engineering Notes.—Electric installation at 220 volts.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
Rivadavia	Fore River Co.	Fore River Co.	May, '10	Dec., 1914	39,750=22·5	Babcock	
Moreno	N.Y. Shipbuilding		July, '10	Mar. 1915		Babcock	

RIVADAVIA (26 Aug., 1911) & **MORENO** (23 Sept., 1911).

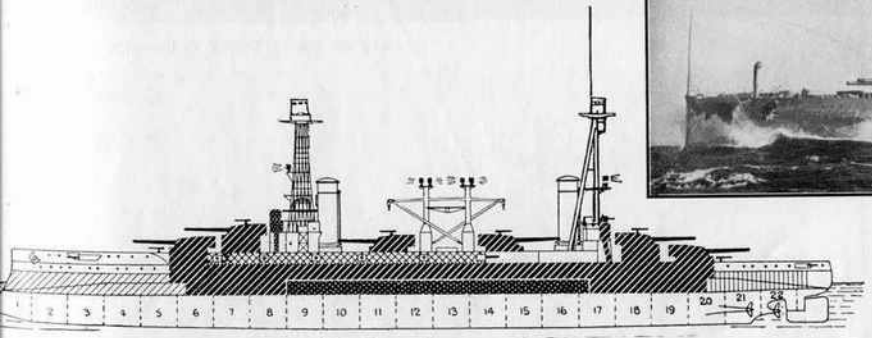
Normal displacement, 27,940 tons. *Full load*, 30,600 tons. Complement, 1215.

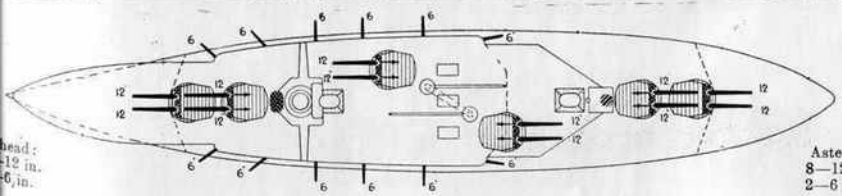
ngth (*w.l.*), 577½ feet. Beam, 95 feet. *Max.* load draught, 28 feet. Length (*over all*), 585 feet.

uns (Bethlehem):
12—12 inch, 50 cal. } Dir.
12—6 inch, 50 cal. } Con.
4—3 inch AA.
4—3 pdr.
6 M.G.
(4 landing).
orpedo tubes (21 inch):
2 *submerged*
(broadside).

Armour (Krupp):
11″—8″ Belt (amidships)
5″ Belt (bow) N.C.
4″ Belt (stern) N.C.
3″ Deck (slopes)
9″—8″ Side above belt..
12″—9″ Big gun turrets ..
6″ Secondary battery (N.C.)
12″ Conning Tower (forward)
9″ Do. (aft.)
Total weight: 7600 tons.

Machinery: Curtis geared turbines. 3 screws. S.H.P. 45,000 = 23 kts.
Boilers: 18 Babcock (converted to oil burning, 1924-25). Oil: 3,600 tons
Nominal radius: 3930 miles at full speed, 8500 miles at 10 kts.





head:
12 in.
6 in.

Broadside: **12**—12 in., **6**—6 in.

Astern:
8—12 in.
2—6 in.

New Construction.

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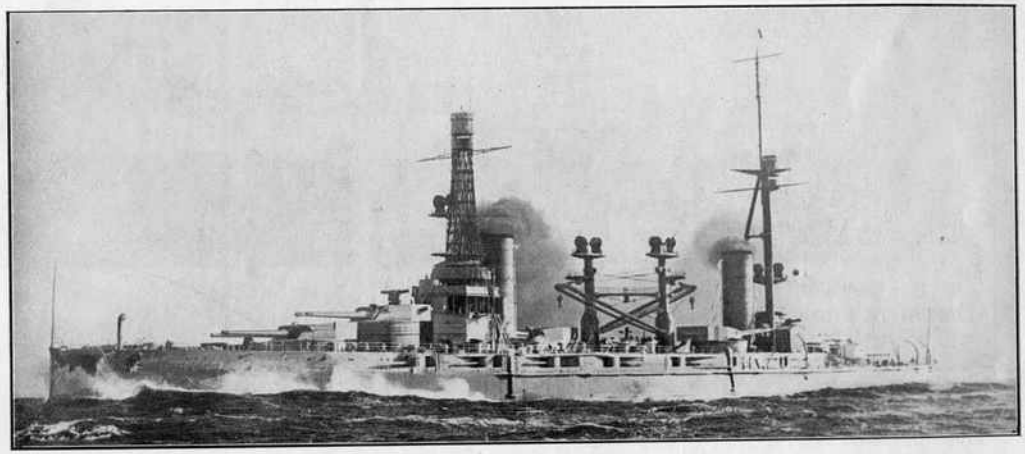

1926 *Photo, Fore River Yard (Builders).*

Gunnery Notes.—Heights of barbettes over normal draught w.l.: No. 1, 29½ feet; No. 2, 37½ feet; Nos. 3 and 4 (echelon), and No. 5, 29 feet; No. 6, 20 feet; 6 inch guns, 19½ feet above w.l. Arcs of fire: end barbettes, Nos. 1 and 6, 270°; Nos. 2 and 5 (super-firing), 300°; Nos. 3 and 4 (echelon) 180° own beam and 100° far beam. R.F. on heads of derrick posts. Director controls (U.S.) type installed during 1924—25 refits. Rates of fire are reported to be: 12 inch, 2 rounds a minute; 6 inch, 8; 4 inch, 12.

Armour Notes.—Main belt is 8 feet deep, 4½ feet above water-line and 3½ feet below same at normal draught. It is 240 feet long, but 11″ section is only 2 feet deep from top edge of belt, and then tapers to 5″ on lower (under-water) edge. Belt under end barbettes is 10″ tapering to 5″ as main belt. Upper belt 400 feet long, 9″ lower edge, 8″ top edge, 6″ battery above this. Funnel bases, 1½″ nickel steel for 15 feet above deck. Protective decks, 1½″ upper, 3″ lower. Two Director stations behind upper belt at bases of C.T. communication tubes. Barbettes: bases are 9″ where exposed. Shields to these: 12″ port-plate, 9″ sides, 11″ back, 3″ roof.

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General Notes.—Built under 1908 Programme. Large refits in U.S.A., 1924—25.

Electric Engineering Notes.—Electric installation at 220 volts.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
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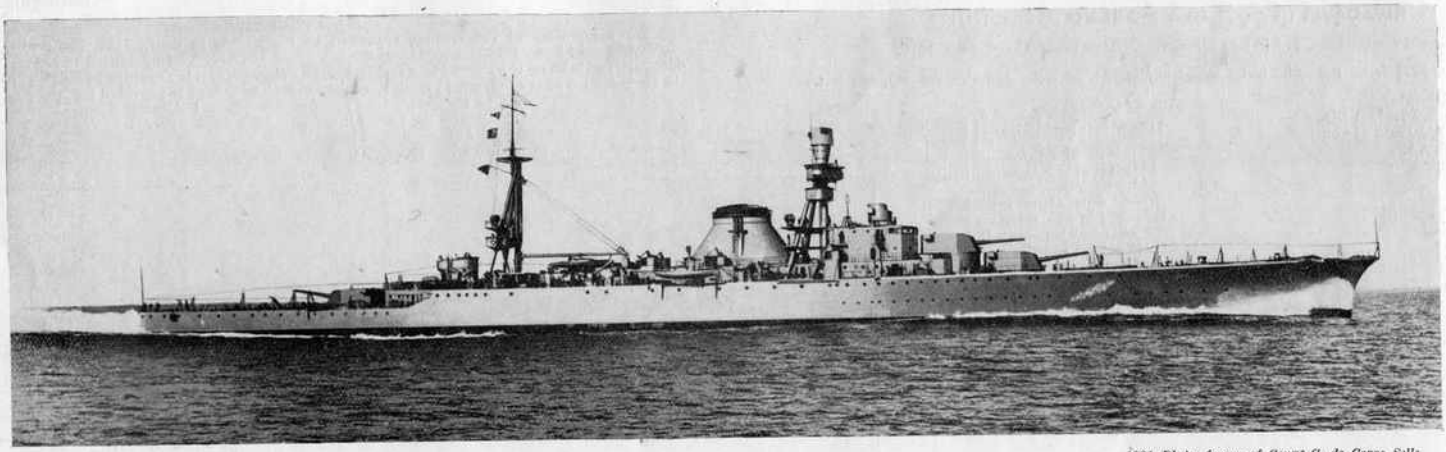
Moreno	N.Y. Shipbuilding		July, '10	Mar. 1915		Babcock	



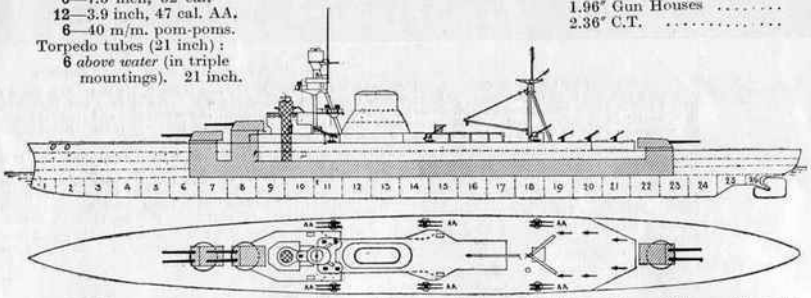
ALMIRANTE BROWN.

1931 *Photo, favour of Count C. de Grave Sells.*

ALMIRANTE BROWN (Aug. 25th, 1929). **VEINTICINCO DE MAYO** (Aug. 11th, 1929).
"Standard" displacement, 6800 tons. (*Full load about* 8600 tons.) Complement, 600.
Length, 533½ feet. Beam, 58 feet. Draught, 16¼ feet.

Guns :
6—7.5 inch, 52 cal.
12—3.9 inch, 47 cal. AA.
6—40 m/m. pom-poms.
Torpedo tubes (21 inch) :
6 *above water* (in triple mountings). 21 inch.

Armour :
1" Deck .....
1.96" Gun Houses .....
2.36" C.T. .....



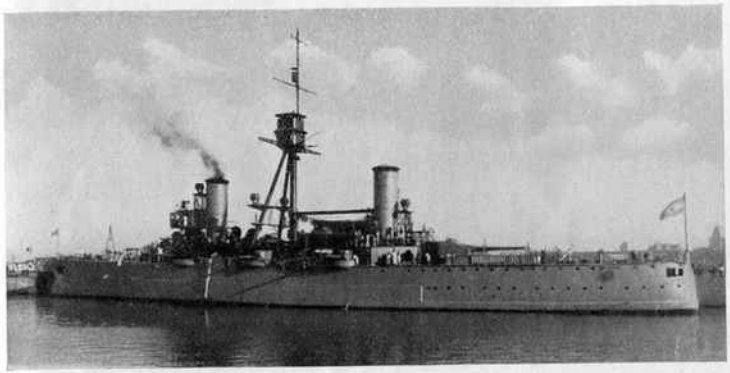
Machinery : Geared Parsons turbines. 6 Yarrow boilers. S.H.P. 85,000 = 32 kts. Oil fuel : 1800 tons. 2 screws.

General Notes.—Both laid down 1927, *25 de Mayo* by Orlando at Leghorn, *Alm. Brown* by Odero at Sestri Ponente. To cost £1,225,000 each. A third Cruiser of this type is projected.

Gunnery Notes.—AA. guns are in twin mountings similar to those in Italian *Trento* type. Proposed alternative plans included a Triple Turret fore and aft with a thick pole foremast.

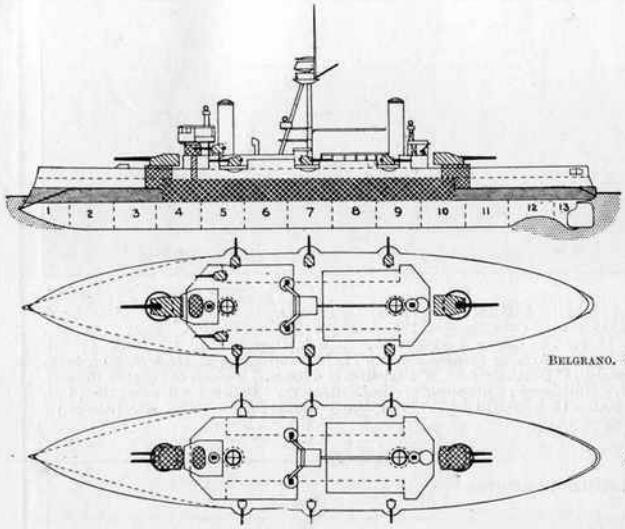
VEINTICINCO DE MAYO

1932 *Photos Official.*



BELGRANO.

1930 *Photo, courtesy of Ministry of Marine.*



BELGRANO. PUEYRREDON.

SAN MARTIN.

BELGRANO (July, 1897), Orlando, Leghorn.

SAN MARTIN (1896), Orlando, Leghorn.

PUEYRREDON (1897), Ansaldo.

GARIBALDI (1895), Ansaldo.

Displacement: 6,100 tons (normal). (*Garibaldi*, 6,457 tons.)

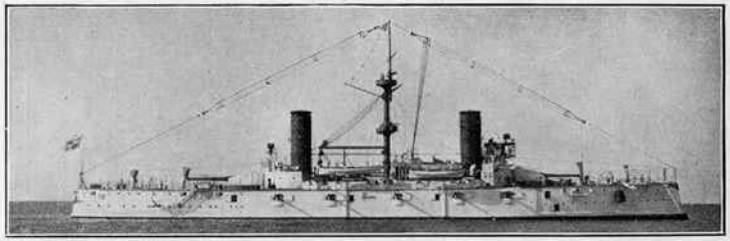
Dimensions: 328 × 59·7 × 23·5 feet.

Guns:	*Belgrano:*	*San Martin:*	*Pueyrredon:*	*Garibaldi:*
	2—10″/254 mm.	4—8″/203 mm.	2—10″/254 mm.	2—10″/254 mm.
	8—4·7″/120 mm.	6—4·7″/120 mm.	8—6″/152 mm.	10—6″/152 mm.
	4—6 pdr./57 mm.	4—6 pdr.	4—6 pdr./57 mm.	6—4·7″/120 mm.
	2—37 mm. AA.	2—37 mm. AA.	1—37 mm. AA.	4—6 pdr./57 mm.

Armour: *Belgrano*, *Garibaldi* and *San Martin* (Harvey), *Pueyrredon* (Terni). Belt 6″–3″. Deck 1½″–2″. Lower deck side 6″. Battery 6″. Barbettes 6″. Gunhouses 6″. C.T. 6″.

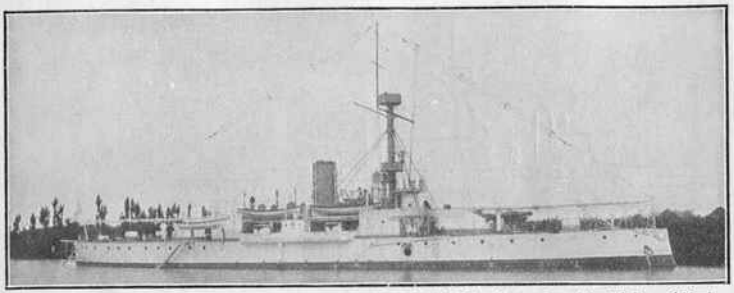
Machinery: 2 sets T. Exp. Boilers: 8 Yarrow. H.P. 13,000 = 18 kts. Oil fuel: 1,000 tons.

Three to be converted to oil fuel and have main deck battery removed, tripod mast fitted and Director firing installed. *Belgrano* completed 1930 by Odero. *San Martin* and *Pueyrredon* are being taken in hand at Buenos Aires and Puerto Belgrano respectively. *Garibaldi* used for Training and will not be altered.



GARIBALDI.

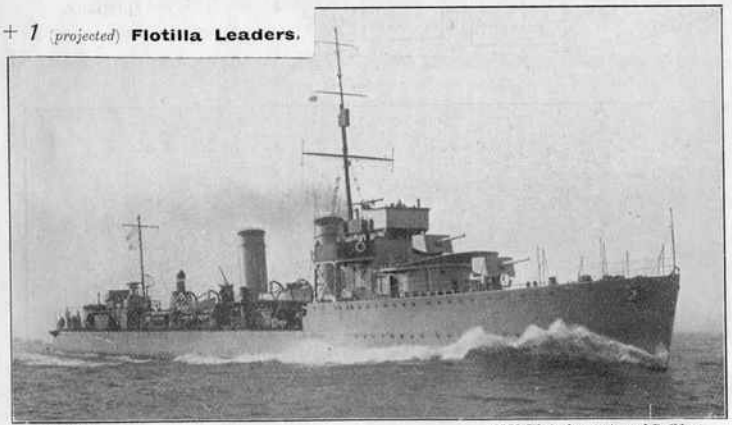
1918 *Photo, by courtesy of Ministry of Marine.*



INDEPENDENCIA. 1918 *Photo, by courtesy of the Ministry of Marine.*

INDEPENDENCIA (1891), **LIBERTAD** (1890). Both built by Laird's, Birkenhead. Displacement, 2595 tons. Complement, 196. Length (*p.p.*), 240 feet. Beam, 43 feet. *Max.* draught, 13 feet. Guns: **2**—9·4 inch, 35 cal. (Krupp), **4**—4·7 inch, 40 cal. (Armstrong), **4**—3 pdr. Armour (compound): 8" Belt (amidships), 2" Deck (flat on belt), 8" Bulkhead (forward), 6" Bulkhead (aft), 8" Barbettes and bases, 5" Shields to big guns (fronts), 4" Conning tower. Machinery: Compound vertical. 2 screws. Boilers: 4 double cylindrical. Designed H.P. 3000=13 kts. Oil fuel: 170 tons. (Converted to burn oil, 1925-27.)

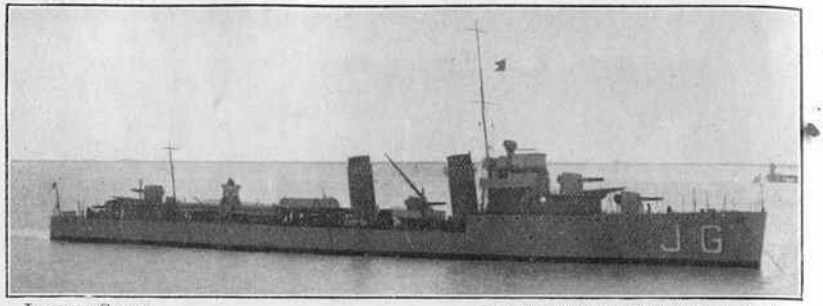
5 + 1 *(projected)* Flotilla Leaders.



MENDOZA. 1929 *Photo, by courtesy of Builders.*

Plan by courtesy of Messrs. J. Samuel White & Co., Ltd.

3 *White*: ***Mendoza*** (July 18th, 1928), ***Tucuman*** (Oct. 16th, 1928) and ***La Rioja*** (Jan. 26th, 1929). All laid down in June, 1927 for completion in June, 1929. Displacement, (*normal*) 1520 tons; (*full load*) 2300 tons. Complement, 160. Dimensions: 352½ (*w.l.*), 335 (*o.a.*)× 31½ × 12½ feet. Guns (Vickers-Armstrong): **5**—4·7 inch, **1**—3 inch AA., **2** pom-pom. Torpedo tubes: **6**—21 inch, in triple deck mountings. 2 sets Parsons turbines, with single reduction gearing. Steam supplied at 250 lbs. from 4—3 drum water-tube boilers. Designed speed 36 kts. 38 kts. maintained for 6 hours on trials by *Mendoza* and *Tucuman*; *La Rioja* touched 39.4 kts. without running machinery in excess of designed power.



JUAN DE GARAY. 1928 *Photo, Capt. Don Mateo Mille, R. Sp. N.*

Cervantes (*ex Churruca*, Cadiz, June 26th, 1925), ***Juan de Garay*** (*ex-Alcala Galiano*, Cartagena, Nov. 3rd, 1925). Purchased from Spanish Government, 1927. Displacement, 1650 tons *normal* (1800 tons *full load*). Dimensions: 320 × 31½ × 10½ feet. Guns: **5**—4·7 inch, **1**—14 pdr. AA. Torpedo tubes: **6**=21 inch, in triple deck mountings. 2 D.C. carried. Machinery: 2 sets Parsons geared turbines. S.H.P. 42,000 = 36 kts. Oil fuel: 540 tons. Radius of action: 4500 miles at 14 kts.

Note.—Design generally resembles that of British *Scott* class. The acquisition of a third vessel of this type is understood to have been authorised, to complete programme.

MENDOZA and CERVANTES *classes.*

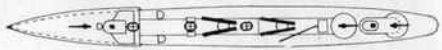
4 Destroyers.

CATAMARCA. 1933 *Photo, Official.*

2 *(German)* type: ***Cordoba*** (Schichau, Nov. 1910), ***La Plata*** (Germania, Jan., 1911). 1000 tons. 295 × 29½ × 7½ feet. Armament: **3**—4 in. (Beth.), **2**—37 mm. AA. **4**—21 inch. tubes. **1** D.C. Thrower. Curtis (A.E.G.) turbines. Boilers: 5 Schulz-Thornycroft, altered to burn oil. Designed S.H.P. 28,000=26·5 kts. Oil: 200 tons. Endurance: 2700 miles at 15 kts., 715 miles at full speed. Trials (*max.*): *Cordoba*, 34·2; *La Plata*, 34·7.

2 *(German)* type: ***Catamarca*** (Schichau, Jan., 1911), ***Jujuy*** (Germania, March, 1911). 997 tons. 288½×7½×28 feet. Armament: **3**—4 inch (Beth.), **2**—37 mm. AA., **4**—21 inch tubes. 1 D.C. Thrower. Curtis (A.E.G.) turbines. Boilers: Schulz-Thornycroft, altered to burn oil. Designed S.H.P. 28,000=27·2 kts. Oil: 220 tons. Endurance: 3000 miles at 15 kts., 800 miles at full speed.

Appearance Note.—*Cordoba* and *La Plata* have ram bow.

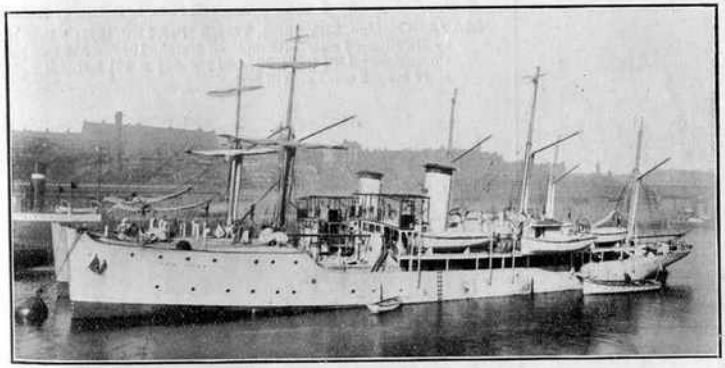


3 Submarines.

1932 *Photo, Official.*

3 *Carullini* type; ***Salta, Santa Fé,*** (July, 19, 1931), ***Santiago del Estero.*** Ordered from Cantiere Navale Franco Tosi, Taranto, Oct., 1927. Displacement $\frac{710}{850}$ tons. H.P. 3000 = 17·5 kts., on surface. Submerged speed 9 kts. Armament: **1**—4 inch, **1**—37 mm. AA. guns, **8**—21 inch tubes. To cost £206,000 each, fully equipped. General design resembles Italian *Mameli* type.

3 Surveying Vessels.

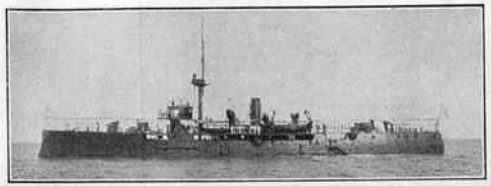


1928 *Photo, by courtesy of Messrs. R. & W. Hawthorn, Leslie & Co., Ltd.*

SAN JUAN (Sept. 27th, 1927). **SAN LUIS** (Oct. 26th, 1927). Both built by Hawthorn, Leslie & Co., Ltd., Hebburn-on-Tyne. Delivered Feb. 1928. Displacement, 970 tons. Dimensions: 207 (*o.a.*) × 33 × 11 feet draught. Complement, 92. Guns: Nil. Machinery: Single shaft Hawthorn-Werkspoor Diesel engine. B.H.P. 700 = 12 kts. 1 screw. 1 single ended Scotch boiler to supply steam to auxiliary machinery. Oil fuel 85 tons. Radius of action: 4000 nautical miles.

ALFEREZ MACKINLAY (Netherlands, 1914). 783 tons. Dimensions: 193¾ × 28¼ × 13 feet. Guns: Nil. H.P. 520 = 10 kts. Used as Lighthouse Inspection Vessel.

Armoured River Gunboats.

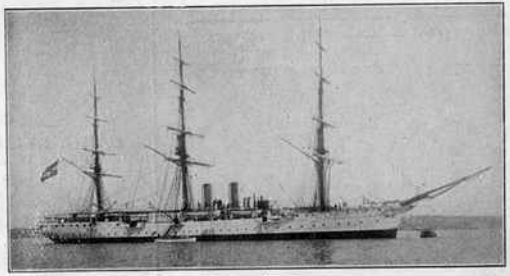


1918 *Photo, Official.*

PARANA (April, 1908) & **ROSARIO** (July, 1908). Both built by Armstrong. Displacement, 1055 tons. Complement, 142. Length, 329⅜ feet. Beam, 32⅜ feet. Draught, 7½ feet. Guns: **2**—6 inch Howitzers, **6**—12 pdr., **2**—37 mm. AA., **2** landing. Armour: 3″ Belt (amidships), 1½″—1″ Deck, 3″ Conning tower. H.P. 1600 = 15 kts. 2 Yarrow boilers. 2 screws. Coal: 120 tons. *Nominal* radius, 2400 miles at 10½ kts.

Note.—These two vessels are remarkable in that their main armament consists of howitzers, 13 calibres in length.

Training Ship.



PRESIDENTE SARMIENTO (1898). Built at Birkenhead. 2850 tons. Complement 294. Dimensions: 251½ × 43¼ × 23¼. Guns: **3**—4·7 inch, 45 cal.; **1**—4 inch, 2—6 pdr., **2**—3 pdr. Torpedo tubes: **3** *above water*. Designed H.P. 2800 = 15 kts. Coal: 330 tons. Boilers: 1 Niclausse, 1 Yarrow, 2 cylindrical single-ended. Radius: 4500 miles at 10 kts.

Notes.—Sheathed and coppered. Has accommodation for 400 boys. Refitted by builders, 1926.

Despatch Vessels. (*Rastreadores.*)

M.7. 1930 *Photo, by courtesy of Ministry of Marine.*

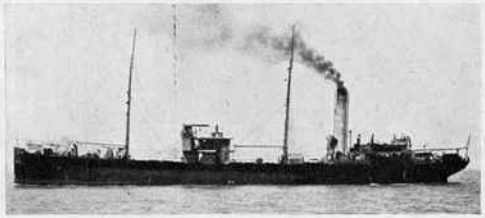
M 1, M 2, M 3, M 4, M 5, M 6, M 7, M 8, M 9, (Germany, 1916-19). These are ex-German Minesweepers of the "M" type, purchased by the Argentine Government in 1922 for use as Despatch Vessels. Displacements vary from 350 to 508 tons. Dimensions: 182 (*w.l.*), 192 (*o.a.*) × 23½ × 7½ feet (*max.*). Engines: 2 sets vertical triple expansion. Boilers: 2 Schulz water-tube. I.H.P. 1800=16 kts. Coal: 550 tons.

M 1, M 6, M 8, and **M 9,** transformed into oil burners. Capacity: 105 tons. **"GOLONDAIRE"** (ex-M10.) is Admiralty yacht.

River Police Craft. (*Policia fluvial*).

SAYHUEQUE (1901), built by Rennie Forrest. 145 tons. Dimensions: 125 × 25 × 2¾ feet. H.P. 185 = 9 kts.

Oil Tanker (rated as Transport).



1932 *Photo, Official.*

MINISTRO EZCURRA (Grangemouth Dockyard Co., Grangemouth, 1914). 2600 tons. Dimensions: 250 × 40 × 18¾ feet. H.P. 1243 = 10½ kts.

Transports (*Transportes*).

(Tonnage given is gross in each case.)

1932 *Photo, Official.*

CHACO (ex-*Rio Claro*, 1923), **PAMPA** (ex-*Rio Bueno*, 1923) (both built by Danziger Werft, Danzig). 1100 tons. Dimensions: 273 × 37 × 24 feet. H.P. 1500 = 11 kts.

1932 *Photo, Official*

AMERICA (ex-*Lake Hector*,1920). 2686 tons. Dimensions: 262 × 43½ × 24 feet. H.P. 1520 = 9·5 kts.

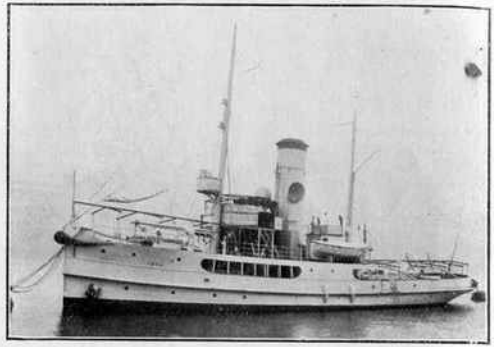
BAHIA BLANCA (Reiherstieg, Hamburg, 1911, taken over during War, 1914-18). 9349 tons. Dimensions: 489 × 59 × 27½ feet. H.P. 4200 = 12·5 kts.

VICENTE FIDEL LOPEZ (Earles, 1906). 507 tons. Dimensions: 164 × 26 × 11¼ feet. H.P. 480 = 9·3 kts.

PRIMERO DE MAYO (Howaldt, 1893). 925 tons. Dimensions: 197 × 29½ × 14 feet. H.P. 650 = 11 kts.

PATAGONIA (Stelling, 1925). 1,350 tons. Dimensions: 193·5 × 27·1 × 13 feet. H.P. 446=9·5 kts.

Tugs (*Remolcadores*).



TOBA. 1928 *Photo, by courtesy of Builders.*

MATACO (Jan. 24th, 1928), **TOBA** (Dec. 23rd, 1927). Both built by Hawthorn Leslie. (Completed March, 1928). 339 tons *gross.* Dimensions: 130½ (*p.p.*), 137 (*w.l.*) × 28½ × 13½ feet. H.P. 1100 = 12 kts. 2 screws. Oil fuel.

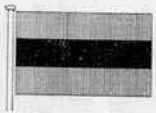
1932 *Photo, Official.*

ONA, QUERANDI (Thornycroft, 1913). 345 tons *gross.* Dimensions: 130 × 28 × 12 feet. H.P. 1200 = 12 kts.

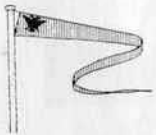
AZOPARDO (ex-*Barstow*, Bethlehem Co., 1919). 437 tons *gross.* Dimensions: 164 × 27½ × 14 feet. H.P. 1800 = 14 kts.

ALBANIA.

Ensign



Mercantile Marine



Pendant *field=red device=black*

Commander of the National Defence

General X. H. Aranitasi

The following particulars of the vessels which form the nucleus of the new Albanian Navy have been officially supplied.

4 Motor Boats: ***TIRANE, SARANDA, DURRES, VLORE.***

Displacement: 46 tons. Length: 80 feet. Motors: 450 B.H.P.=17 kts. Guns: 1—3″/40 cal., 2 M.G. Built at Venice (Svan), 1926.

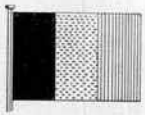
2 Gunboats (ex-German): ***SKENDERBEG, SHQIPNIA.***

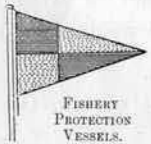
Displacement: 230 tons. Length: 140 feet. 2 engines: 600 H.P.=12 kts. Guns: 1—2·3″.

GERCOG AFFTAR GGOT, Displacement: 8189 tons. Length (*waterline*), 452¾ feet. Beam, 63⅜ feet. *Max.* draught, 25 feet. Length (*over all*), 459 feet. Guns: 10—5.5 inch, **4**—3 inch AA., **12**—40 m/m., **4**—37 m/m. Armour (Harvey Nickel): 6″ Belt (ends), 3″ Forecastle, 2″—1″, ½″ Decks, 3″—2¼″ Lower deck side, 7¾″ Casemates (8), 6¼″ Conning tower. Machinery: 2 sets vertical triple expansion. 3 screws. Boilers: 20 Niclausse. Designed H.P. 19,600=21 kts. Coal: *normal* 1030 tons, *maximum* 1650 tons. Begun at Lorient, 1898; completed, 1902. Complement, 487. Reconstructed, with tripod mast and other modifications, 1926.

BELGIUM.

Flags.





Fishery Protection Vessels.

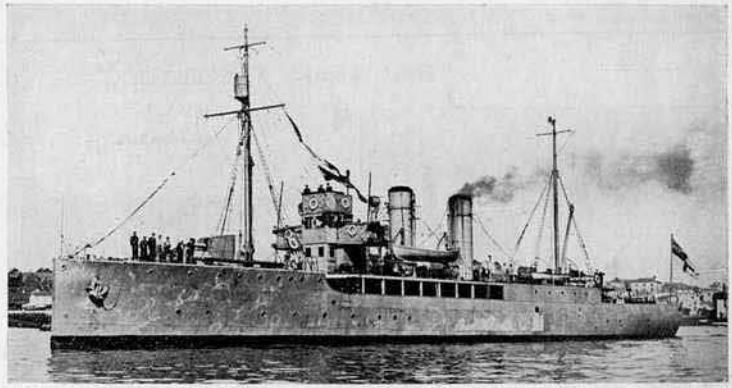
Other State-owned Ships.

Uniforms.

Commandant de 1e Classe. Lieutenant de 2e Classe.

The National Flag is also used as Ensign for both State and Mercantile vessels.

Sloop (*Aviso*).



ZINNIA. 1920 *Photo, Abrahams, Devonport.*

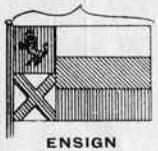
ZINNIA (ex-British "Flower" class Sloop *Zinnia*, launched August, 1915, by Messrs. Swan, Hunter & Wigham Richardson, Wallsend. Purchased for Belgian Navy, June, 1920). 1200 tons. Dimensions: 250 (*p.p.*), 262½ (*o.a.*)× 33× 11 (*mean*) × 11¾ feet (*max.* draught). Guns: **1** M.G. on AA. mounting. Designed I.H.P 1400 = 17 kts., but actually requires *about* 2000 I.H.P. for this speed. 1 set, triple expansion engines. Boilers: 2 cylindrical. 1 screw. Coal: 130 tons *normal*; 250 tons *max.* = *about* 2000 miles at 15 kts. Complement (as British ship), 77. Employed on Fisheries Protection duties.

BULGARIAN DANUBE FLOTILLA.

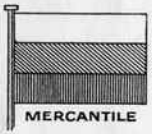
Note.—Under the Treaty of Peace, Bulgaria is only allowed to maintain four fast Patrol Boats and six Vedette Boats on the Danube, for Police and Preventive Duties.

Note that the red of the flag is crimson.

▥ = Red. ▭ = White. ▨ = Green. ⁝⁝ = Yellow.



ENSIGN



MERCANTILE

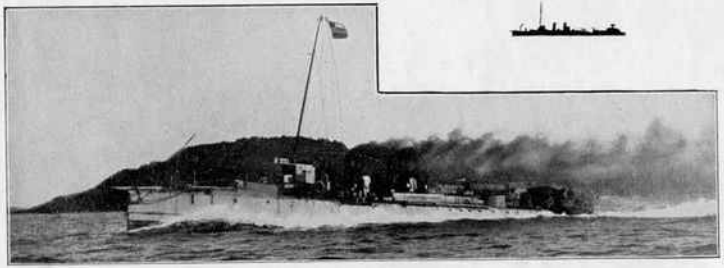
Flags.

Jack: A white flag with a green saltire and superimposed over all the Cross of St. George.

Minister of War and Marine :—Lieut.-General Ivan Velkoff.

Patrol Boats.

SILHOUETTE.



4 *Creusot* boats: ***Smyeli, Khrabry, Derzki, Strogi*** (built in sections in France; reassembled at Varna, 1907-8). 100 tons. Dimensions: 126½×13¼×8½ feet. Armament: **3**—3 pdr. Torpedo tubes removed. Designed H.P. 2000 =26 kts. 1 screw. Du Temple boilers. Coal, 27 tons. Civilian complement, 23.

Motor Vedette Boats.

Minior, Vzrif, Capitan Minkoff, Conductor Dokizanoff. No particulars available.

Nos. 1, 2 (ex French C 27, C 30, purchased 1922). 77 tons. 3 sets of 220 B.H.P. standard petrol motors, totalling 660 B.H.P.=17 kts. Petrol: 9 tons. Endurance: 700 miles at 10 kts. Guns: **2**—6 pdr. Complement, 26.

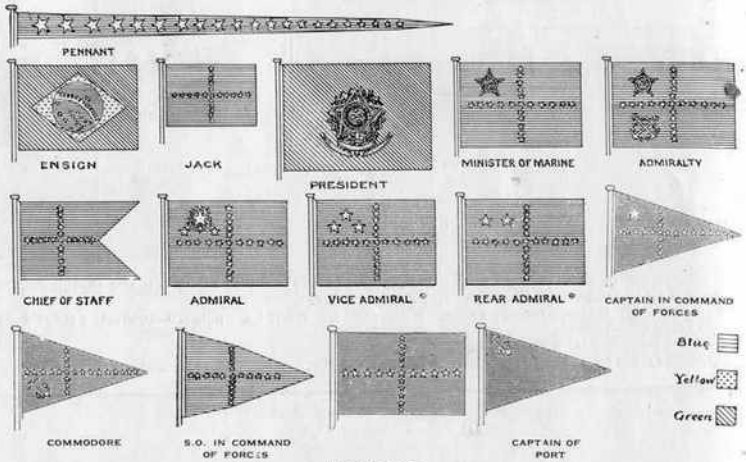
River Patrol Boats (on Danube).

Botef, Levski. 12 tons. Armed with spar torpedoes.

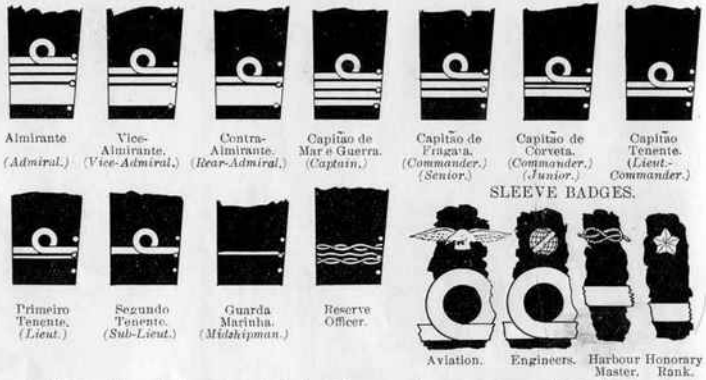
Tzar Arsen, Tzar Simeon. No particulars available.

BRAZIL.

Officially revised by courtesy of the Chief of the Naval Staff, 1933.



Uniforms.



All have three buttons towards back of sleeves and across stripes. Deck, Engineer and Aviation Branches all have curl. Other branches have not.

Caps:—As British Navy.

Minister of Marine :—Vice-Admiral Protogenes Pereira Guimarães.

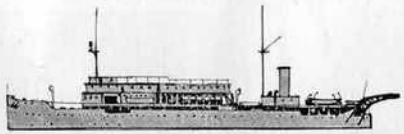
Chief of Naval Staff :—Rear-Admiral Hugo de Roure Mariz.

Asst. Naval Attaché, London :—Captain Natal Arnaud.

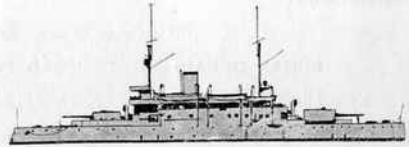
Mercantile Marine.

(From "Lloyd's Register," 1932). 295 vessels of 488,888 gross tonnage.

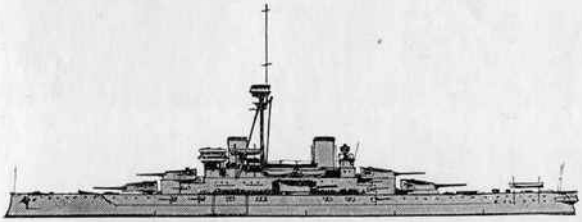
PERNAMBUCO.



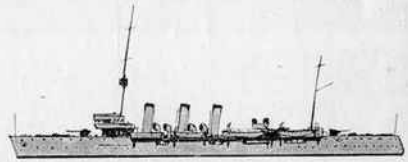
CEARA (*S/M. Depot Ship*).
(*Double hulls at stern.*)



FLORIANO.



SAO PAULO.

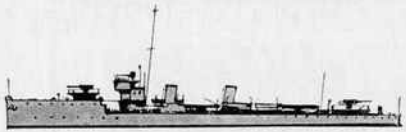


BAIA *class*. (2 ships).

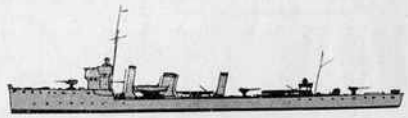
Guns in Service.

Notation.	Calibre.		Length in calibres	Weight of A.P. shell	Muzzle Velocity.	Max. penetration A.P. capped at K.C. at 5000 yards.	Max. penetration A.P. capped at K.C. at 3000 yards.	Danger Space against average ships at 10,000 yards.	Danger Space against average ships at 5000 yards.	Danger Space against average ships at 3000 yards.	*Service* rounds per minute
HEAVY	inch. 12	c/m. *30·5*	cals. 45	lbs. 850	ft. secs. 2800	inch. ...	inch. ...	...	...	...	2
MEDIUM	9·4	*24*	45	380	2700	9	11½	...	...	...	3
LIGHT	6	*15*	40	100	2500	4	5	65	200	420	6
	6	*15*	50	100	2640	4½	5½	72	240	460	6
	4·7	*12*	40	45	2150	..	..	...	...	...	8
	4·7	*12*	50	45	2630	1¾	3	153	55	11	8
	4	*10*	50								

Note:—Alterations to names is in accordance with the new phonetic spelling of Portuguese words (but not those of Indian origin) recently introduced.



(9 Pará *class*.)



MARANHAO.

F *class* (3)

HUMAYTA.

A new programme of naval construction to be spread over several years will include:—

2 Cruisers of 8500 tons.
9 Destroyers of 1600 tons.
8 Submarines of 900 tons.
6 Minesweepers of 600 tons.
3 Oil Tankers of 6000 tons.

(Minas Gerais Class—2 Ships.)

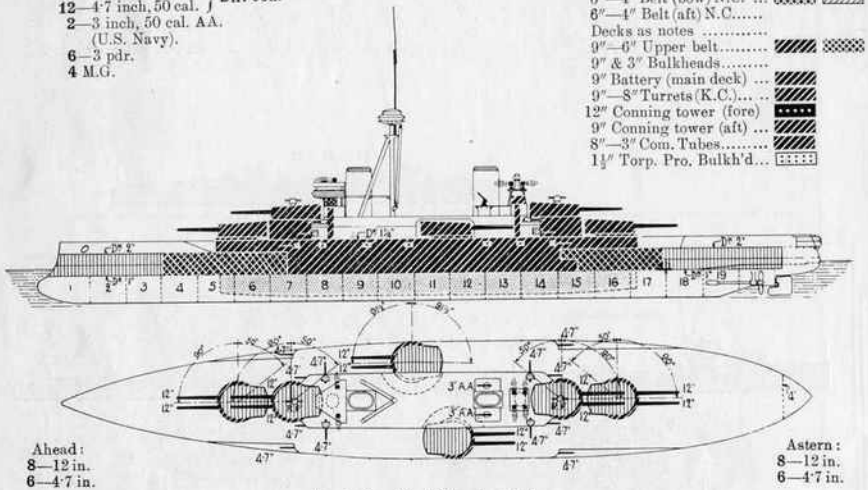
MINAS GERAIS (Sept., 1908), SÃO PAULO (April, 1909).

Normal displacement 19,200 tons. *Full load* 21,200 tons. Complement, 850.

Length (*waterline*) 533 feet; (*p.p.*), 500 feet. Beam, 83 feet. *Max.* load draught, 25 feet. Length (*over all*), 543 feet.

Guns (Armstrong):
12—12 inch, 45 cal. } **Dir. Con.**
12—4·7 inch, 50 cal. }
2—3 inch, 50 cal. AA. (U.S. Navy).
6—3 pdr.
4 M.G.

Armour (Krupp):
9″ Belt
6″—4″ Belt (bow) N.C.
6″—4″ Belt (aft) N.C.
Decks as notes
9″—6″ Upper belt
9″ & 3″ Bulkheads
9″ Battery (main deck)
9″—8″ Turrets (K.C.)
12″ Conning tower (fore)
9″ Conning tower (aft)
8″—3″ Com. Tubes
1½″ Torp. Pro. Bulkh'd



Ahead:
8—12 in.
6—4·7 in.

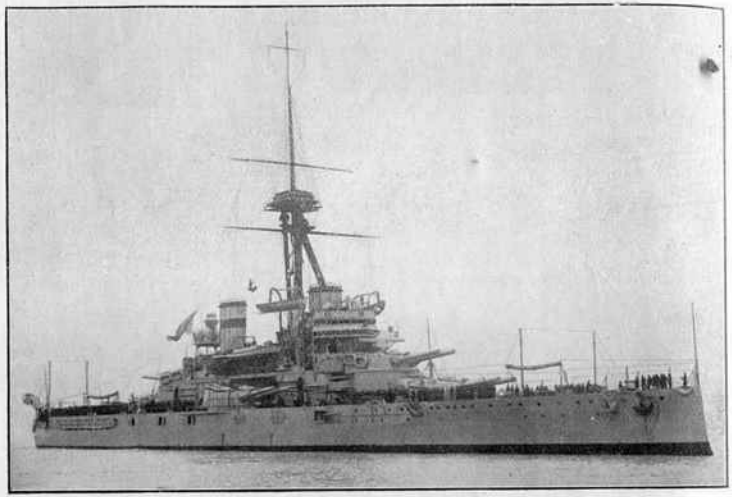
Astern:
8—12 in.
6—4·7 in.

Broadside: **10**—12 in., **6**—4·7 in.

Machinery: 2 sets triple expansion. 2 screws. S.H.P. 30,000 = 21 kts. Boilers: 6 Thornycroft in *Minas Gerais*. 18 Babcock S.H.P. 23,500 in *São Paulo*. Coal:—800/2360 tons + 350 tons oil.

Gunnery Notes.—Complete modern standard Sperry-Ford, U.S.N. fire control installation, fitted at New York Navy Yard. Ten 4·7 inch guns removed from the main deck, 1931.

Armour Notes.—**Main belt 22½ ft. deep, 5 ft. of this being below waterline.** Decks are thus:—1½″ upper deck, 2″ main, 1″ middle, 1″ lower. Area of upper and middle decks roughly bounded by all gun positions; main and lower decks at ends outside gun positions. Barbette bases 3″ within belt. Bulkheads 9″ down to main deck, 3″ to middle deck. 4″ Bulkhead across stern.

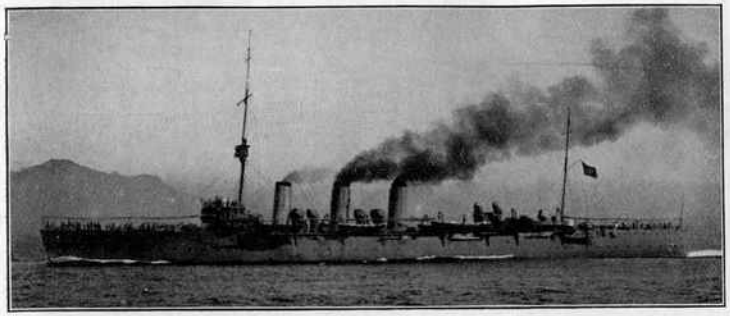


São Paulo. *Photo, Cribb (added 1925).*

Minas Gerais is undergoing extensive alterations including reboilering with 6 Thornycroft high pressure boilers. Fuel supply will be altered.

Name.	*Builder.*	*Machinery.*	*Laid down.*	*Completed.*	*Trials. 30 hour at ¼*	*Trials. Full power*	*Boilers.*	*Refit.*
M. Gerais	Armstrong	Vickers	1907	Jan.'10	16,177 = 19·13	25,519 = 21·2	Babcock	1934.
S. Paulo	Vickers	Vickers	1907	July '10	16,067 = 19·85	25,517 = 21·2	Babcock	1921.

(1908) Cruisers (*Cruzadores*).



BAIA

1926 *Official Photo.*

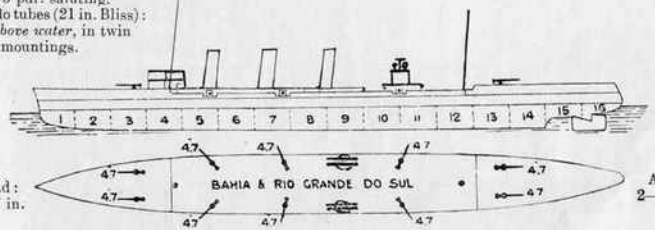
BAIA (Jan., 1909) & **RIO GRANDE DO SUL** (April, 1909).

Normal displacement 3150 tons. Complement 400.

Length, (*p.p.*), 380 feet. (*o.a.*), 401½ ,, Beam, 39 feet. *Mean* draught, 13 feet. 7½ ins.

Guns:
10—4·7 inch, 50 cal. (Armstrong)
4—3 inch, 50 cal. AA. (U.S.)
4—3 pdr. saluting.
Torpedo tubes (21 in. Bliss):
4 *above water*, in twin mountings.

Armour:
1½″ Deck.....
3″ Conning tower .....



Ahead: 2—4·7 in.

Astern: 2—4·7 in.

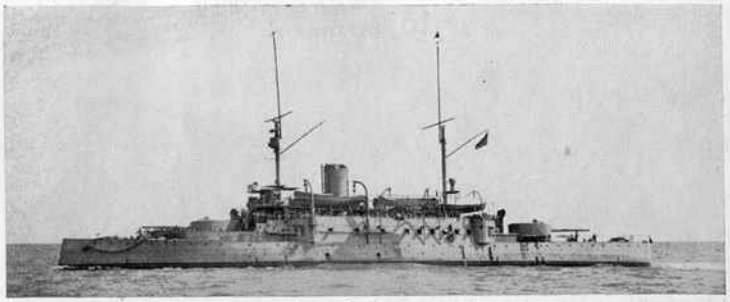
Broadside: 5—4·7 inch.

Machinery: 3 Brown-Curtis geared turbines. 3 screws. Boilers: 6 Thornycroft oil-burning. S.H.P. 22,000 = 27 kts. 1926 *Trials*: *Baia*, 23,000=28.6. Oil fuel: 640 tons. Endurance: *about* 2400 miles at 24 kts., 3092 miles at 18 kts., 6600 miles at 10 kts.

Gunnery Notes.—Fire control originally consisted of voice tube from control stations to bridge and to plotting rooms on second deck—thence to battery. 1 R.F. and 2 S.L., 1 S.L. over Chart house and 1 on after S.L. platform. These arrangements have been improved, and Director system is now being installed.

General Notes.—Built by Armstrong; engined by Vickers; both begun 1908 (under 1907 Naval Programme) and completed 1910. Completely refitted 1925-26, by Companhia Nacional de Navegação Costeira, Rio, new engines and boilers (to burn oil fuel) being installed by Messrs. Thornycroft. Heating Surface, 26,027 sq. ft.

(1896) Coast Defence Vessel (*Encouraçado*)

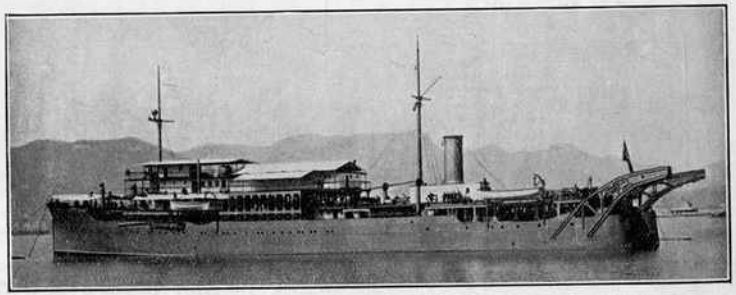


1919 *Photo, Commr. B. D. Holberton, R.N.*

FLORIANO (1893), built at La Seyne. Displacement, 3162 tons. Complement, 200. Length (*p.p.*), 267½ feet. Beam, 48 feet. *Max.* draught, 13½ feet. Guns: **2**—9·4 in., 45 cal.; **4**—4·7 in., 50 cal. Armour (Harvey-nickel): 13¾″ Belt (amidships), 4″ Belt (ends), 1½″ Deck (reinforcing belt), 8″ Turrets, 3″ Casemates, 5″ Conning tower. Machinery: 2 sets triple expansion. 2 screws. Boilers: (1912), Babcock. Designed H.P. 3400=15 kts. Coal: 246 tons. Radius of action: 2500 miles at 10 kts. Refitted 1924-1925. Sister ship *Deodoro*, sold to Mexico.

Submarine Carrier, Depot, Docking and Salvage Ship.

(Also serves as Training Ship for submarine service.)



1917 *Photo, by courtesy of the Fiat-San Giorgio Co.*

CEARÁ (Spezia, 1915). Length (*p.p.*) 328 feet. Beam, 52 feet. Draught and displacement (with all stores) vary thus: (*a*) with dock empty and dock-gate closed 4100 tons at 14 feet draught; (*b*) with dock-gate open and dock flooded to float submarine in, 4130 tons at 17½ feet; (*c*) with gate closed and submarine docked, 4560 tons at 15 feet; (*d*) with gate closed and submarine under hydraulic pressure test in dock, 6460 tons at 20½ feet; (*e*) with dock empty and gate closed, and when raising submarines by double cranes at stern, 4615 tons at 15 feet. Machinery: 2 sets 6-cylinder, 2-cycle Fiat-Diesel engines. 4100 B.H.P.=14 kts. Fuel: 400 tons (own bunkers) + tons for submarines (sufficient fuel carried to fill tanks of six submarines four times). Radius of action: 4000 miles at 10 kts. Guns: **4**—4 inch, **2** smaller. Built by Fiat-San Giorgio Co. Completed 1916.

10 Destroyers.

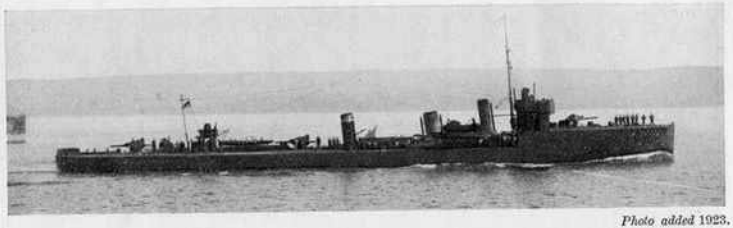
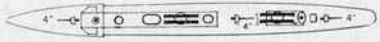
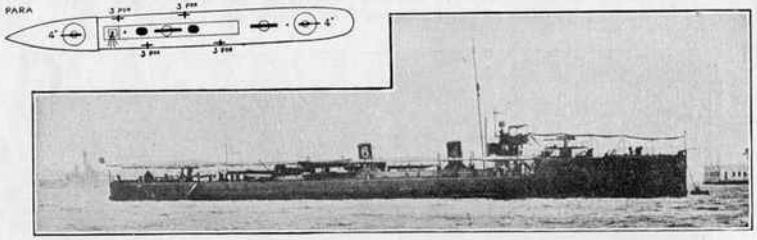


Photo added 1923.

1 *Thornycroft* type. ***Maranhão*** (ex H.M.S. *Porpoise*, 1913). Displacement: 934 tons. Dimensions: 265½ × 26½ × 9½ (*minimum*), 10½ (*maximum*) draft. Guns: **3**—4 inch, **1**—2 pdr. Tubes: **4**—21 inch, in pairs. Designed H.P. 22,500=31 kts. Machinery: Parsons' turbines. Thornycroft boilers. Oil: 250 tons. Complement, 100.



Note.—Reported to have lost greatly in speed. Employed as Stokers' Training Ship at present.

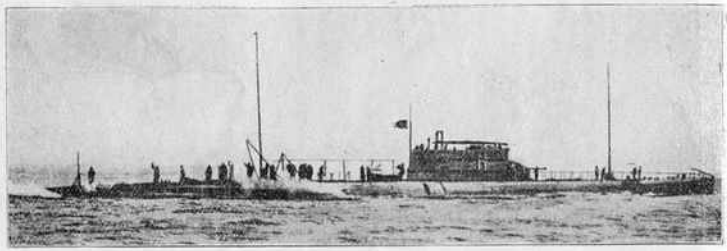


1918 *Photo.*

9 *Yarrow* type: ***Matto Grosso, Piauhy, Pará*** (all launched 1908), ***Rio Grande do Norte, Paraiba, Alagoas, Santa Catarina*** (all launched 1909), ***Parana, Sergipe*** (both launched 1910). Displacement 560 tons. Dimensions: 240 × 23¾ × (*Mean* draught) 7½ feet. Armament: **2**—4 inch, **4**—3 pdrs., **2**—18 in. tubes. Designed H.P. 8000 = 27 kts. Machinery: 2 sets triple expansion reciprocating. 2 double-ended Yarrow boilers. Majority of these boats retubed 1917-18. Coal: 140 tons. Nominal radius: 1600 miles at 15 kts. On acceptance trials with 6565 to 8877 H.P. they made 27·1 to 28·7 kts. No effective means of controlling fire of guns or torpedo tubes. Complement, 75.

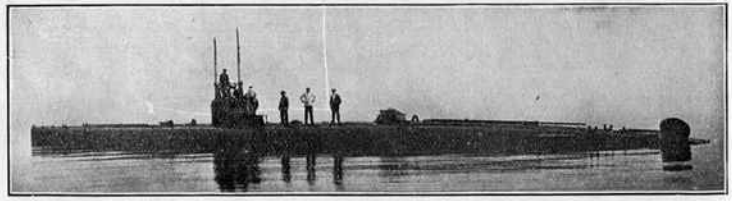
Note:—The numbers on after funnel are thus: 2, *Pará*; 3, *Piauhy*; 4, *R. G. do Norte*; 5, *Paraiba*; 6, *Alagoas*; 7, *Sergipe*; 8, *Parana*; 9, *S. Catarina*; 10, *Matto Grosso*.

4 Submarines.



HUMAYTA. 1929 *Photo, Capitan Mateo Mille, R. Sp. N.*

1 *Ansaldo* type: ***Humayta.*** Ansaldo San Giorgio Co., Spezia, April, 1927. Displacement: 1450 tons *surface*, 1884 tons *submerged*. Dimensions: 284¼ × 25½ × 14 feet. Fiat type Diesel engines. Designed H.P. $\frac{4000}{2200} = \frac{18·5}{10}$ kts. Armament: **1**—4 inch, 4 M.G., **6**—21 inch tubes. Tube aft for minelaying (16 mines carried). Similar in general design to Italian *Balilla* type (*vide* notes in Italian Section for further details). Ordered in 1926 and completed in 1927, but not delivered in Brazilian waters until two years later.

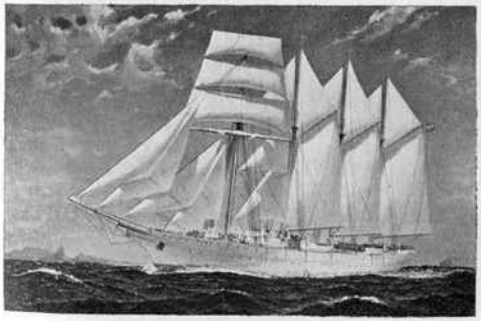


1917 *Photo, by favour of Ansaldo San Giorgio Co.*

3 *Laurenti-Fiat* type: ***F 5, F 3, F 1*** (Spezia, 1913-14). Built by Fiat-San Giorgio Co. Dimensions: 150 × 13·8 × 9·8 to 12 feet draught. Displacement: 250 tons *on surface*, 305 tons *submerged*. Machinery: 2 sets 350 H.P. 6-cylinder, 2-cycle Fiat Diesel engines *on surface*=700 H.P. 2 sets 250 H.P. electric motors + batteries = 500 H.P. *submerged*. Speeds: (maximum) 13¼ kts. *on surface*, 8 to 8½ kts. *submerged*. Radii of action: *on surface* about 800 miles at full speed, 1600 miles at 8½ kts; when *submerged*, 18 miles at full speed, or 100 miles at 4 kts. Torpedo tubes: **2**—18 inch in bows. Complement about 20.

Gunboats.

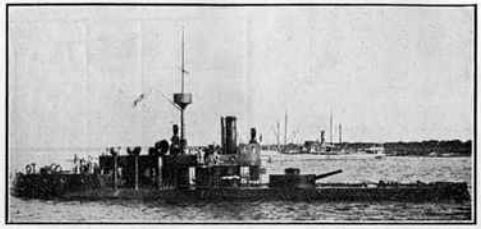
Training Ship.



ALMIRANTE SOLDANTE. (*Vickers*, 1933).

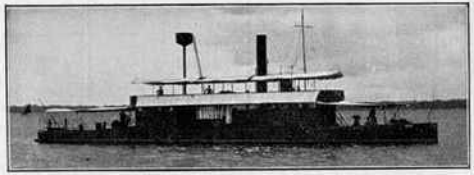
Displ. 3000 tons.
Guns: **2**—4". **1**—3" AA. **7** smaller.
Aux. Diesels: 1500 B.H.P.

River Craft.



1916 *Photo, Abrahams.*

PERNAMBUCO (1909-10, River Monitor, built at Rio). 470 tons. Dimensions: 146 × 24 × 5¼ feet. H.P., 800 = 11 kts. Coal: 45 tons. Guns: **3**—4·7 inch, **10** machine. Armour: 6·6"–4" belt, 4" deck, 3½" conning tower, 6" turret. 2 screws. Took 20 years to build.



MISSOES (Yarrow, 1904). 110 tons. Dimensions: 120 × 20 × 2 feet. Armament: **1**—3·4 inch (15 pdr.) howitzer, **1**—6 pdr., **4** maxims. H.P., 300 = 11 kts. Complement, 30.

TEFFÉ (1890-92, refitted 1917). River Gunboat of 33 tons. Dimensions: 90 (*p.p.*) × 15 × 5 feet. Guns: **1**—3 pdr., **2** M.G. H.P. = 11 kts. Coal: 7 tons.

OYAPOCK (—). Despatch Vessel of 195 tons, 14 kts. speed. Guns: **1**—3 pdr.

AJURICABA (Ross & Duncan, Glasgow, 1923). 120 tons. Dimensions: 125 × 18 × 9 feet. Coal: 35 tons. Guns: **4** M.G.

AMAPA (1917). 320 tons. Dimensions: 118 × 23 × 19 feet. Guns: **2**—6 pdr., **4** M.G. Speed, 15 kts.

Fleet Collier.

1920 *Photo, Gieves, Ltd.*

BELMONTE (ex-German S.S. *Valesia*, Rostock, 1912).
5227 tons *gross*. Dimensions: 364¾ × 51 ×
Guns: **4**—4·7 in., **6**—6 pdr. H.P. 2700 = 12 kts.
Can take about 6500 tons as cargo.

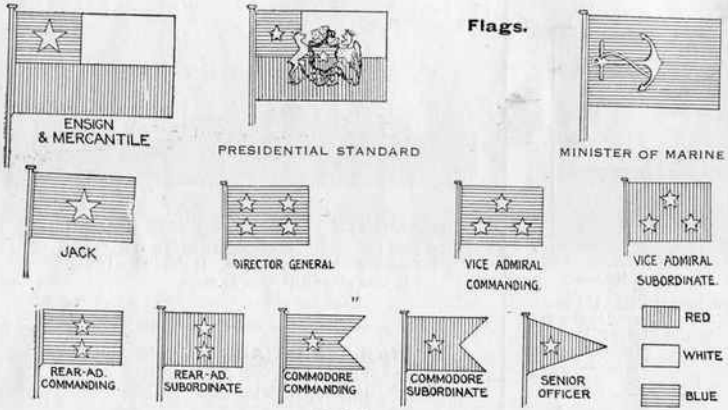
Oiler.

NOVAES DE ABR (Rotterdam, 1918).
Displacement, 500 tons.
H.P. 400 = 10 kts. Oil: 400 tons.

CHILE.

Officially revised by courtesy of the Jefe del Estado Mayor General de Marina, Santiago, 1933.

Flags.



Uniforms.

	Vice Almirante.	Contra-Almirante.	Capitan de Navio.	Capitan de Fragata.	Capitan de Corbeta.	Teniente 1°	Teniente 2°	Guardia Marina de 1a clase.	Guardia Marina de 2a clase.
Corresponding British or U.S.	*Vice-Ad.*	*Rear-Ad.*	*Captain.*	*Commander.*	*Lieut.-Comdr.*	*Lieut. (Senior).*	*Lieut. (Junior).*	*Sub. Lieut.*	*Midshipman*

Other Branches the same with colours as follows:—Engineers (blue), Paymasters (white), Doctors (red), Chaplains (purple).

Minister of Marine: Vice-Admiral don Arturo Swett.
Naval and Air Attaché (London).
Personnel: About 6000, all ranks.

Special Note.

There is one Officer of the Royal Navy as *Technical Adviser*, Commdr. V.C. Dorman Smith, R.N.

Naval Bases.

TALCAHUANO. Two dry docks, 614 × 87 × 30½ feet and 800 × 116 × 36 feet respectively. One small floating dock, 216 × 42 × 15 feet. Gunnery, Torpedo, Submarine, and other Training Establishments here.

VALPARAISO. One small steel floating dock privately owned, 314 × 65 × 21 feet (4500 tons capacity). Naval Academy for training of executive and Engineering branches here, also schools for Communications, Coast Artillery, Navigation, etc.

There is also a small steel floating dock at Mejillones.

Naval Ordnance. (All details unofficial.)

	Type*	Calibre. Inches.	Calibre. Cm.	Length. (cals.)	Weight of Gun. (tons.)	Weight of Proj. (lbs.)	Weight of Charge. (lbs.)	M.V. (ft.-secs.)	M.E. (ft.-tons.)	Max. R.P.M.
HEAVY	A	14"	*35·6*	45	85	1585	324	2500	..	2
	C	9·4"	*24*	36	24	374	198	2230	12,421	..
	A	8"	*20·3*	45	18·5	210	44	2650	10,226	4
	A	8"	*20·3*	40	15	..	..	2582	..	..
MEDIUM	A	6"	*15·2*	50	8¾	100	31	3000	6240	9
	A	6"	*15·2*	40	6⅜	100	18·3	2500	4334	8
	A	4·7"	*12*	50	63½ cwt.	45	10¾	2953	2721	12
	A	4·7"	*12*	45	53	45	8	2552	2110	10
	C	4·7"	*12*	45	..	..	..	..	..	..
LIGHT	A	4"	*10·2*	..	..	..	..	..	..	..

* A=Armstrong; C=Schneider-Canet.

14 inch, 45 cal., in *Alm. Latorre.*
9.4 inch, 36 cal., in *C. Prat.*
8 inch, 40 cal., in *O'Higgins, B. Encalada.*

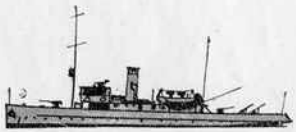
6 inch, 50 cal., in *Alm. Latorre* and *Chacabuco.*
6 inch, 40 cal., in *O'Higgins, B. Encalada.*
4.7 inch in *Alm. Riveros* class (3).
4.7 inch in *C. Prat, Chacabuco, G. Baquedano*
4 inch in *Alm. Lynch* class (2) and *Alm. Riveros* class (3).

Torpedoes: 21 inch (heater), and 18 inch. **Mines:** Similar to British pattern.

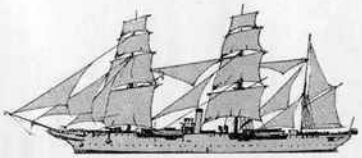
Mercantile Marine.

(From "Lloyd's Register" 1933 figures.)

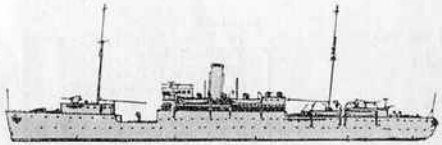
99 vessels of 151,527 gross tonnage.



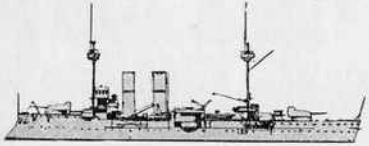
LEUCOTON, ELICURA, OROMPELLO.



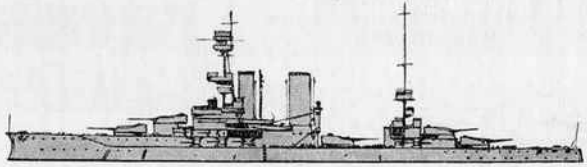
GENERAL BAQUEDANO.
(*Training Ship.*)



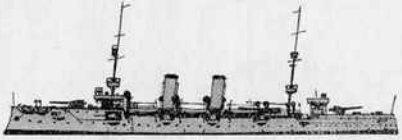
ARAUCANO.



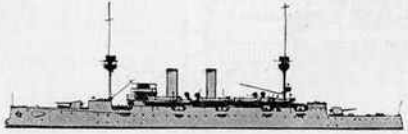
CAPITAN PRAT.



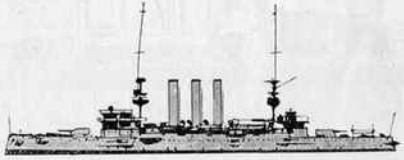
ALMIRANTE LATORRE.



CHACABUCO.



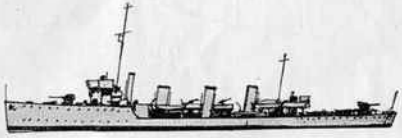
BLANCO ENCALADA.



GENERAL O'HIGGINS.

TORPEDO CRAFT.

SERRANO *class* (6).



LYNCH *class* (5)
(With slight modifications between individual ships).

"H" *class* (6)

O'BRIEN *class* (3)

ALMIRANTE LATORRE (ex British *Canada*, ex Chilean *Almirante Latorre*, Nov., 1913). Displacement, 28,000 tons (about 32,000 *full load*). Complement, 1176.

Length (*p.p.*), 625 feet. (*o.a.*), 661 feet. Beam, 103 feet. { *Mean* draught, 28½ feet. / *Max.* „ 30 „ }

Guns (Armstrong):
- 10—14″, 45 cal. } Dir. Con.
- 14—6″ 50 cal. }
- 4—4″ (anti-aircraft)
- 4—3 pdr.
- (2 landing)
- 4 M.G.

Torpedo tubes (21″):
- 4 *submerged*.

Armour:

Decks.
- 1″ Shelter (over casemetes)
- 1″ Fo'xle (over battery)
- 1½″ Upper (outside battery)
- 1½″ Main (aft)
- 1″ Protective
- 2″ (forward) } lower
- 4″ (aft) }

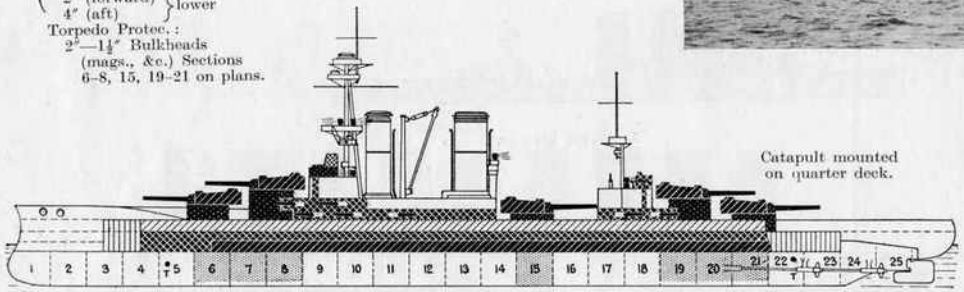
Torpedo Protec.:
- 2″—1½″ Bulkheads (mags., &c.) Sections 6–8, 15, 19–21 on plans.

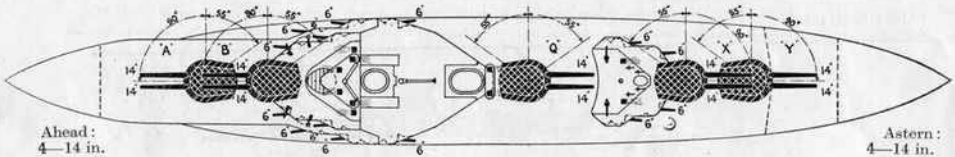
Armour:

Vertical.
- 10″ Lower belt .....
- 7″ Middle belt .....
- 4½″ Upper belt .....
- 6″-4″ Belt (ends)
- 4½″, 4″ B'lkh'ds (f. & a.)
- 6″ Batteries .....
- 10″ Barbettes .....
- 10½″-9″ Gunhouses
- 3″ C.T. base* .....
- 11″ C.T. (6″—3″ hood)..
- 6″ Fore com. tube ....
- 6″ Torpedo C.T. .....
- 6″ Aft com. tube .....

*Not shown on plans.

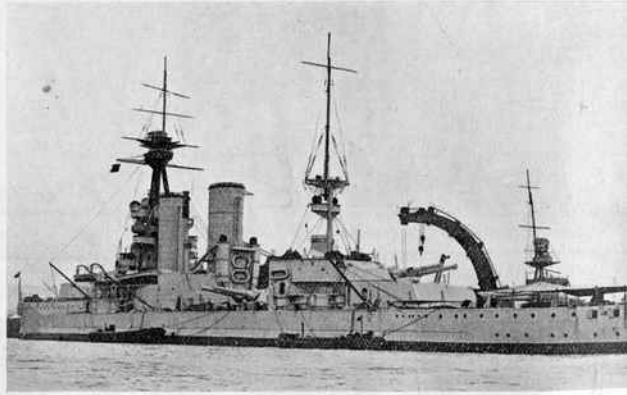
1933 *Ph*





Ahead:
4—14 in.
4 to 8-6in.

Astern:
4—14 in.
2 to 6-6in.



1931 *Fle*

Broadside: 10—14 in., 7—6 in., 2—21 in. tubes.

Machinery: Turbine, 4-shaft: (L.P.) Parsons: (H.P.) Parsons. Boilers: 21 Yarrow. Designed H.P. 37,000 = 22·75 kts. Oil: tons. Endurance: 4,400 miles at 10 kts.

Gunnery Notes.—14-inch have a range only limited by *max.* visibility. Originally had 16—6 inch, but the 2—6 inch on upper deck, abeam of after funnel, were removed and ports plated over. Reason for removal was because guns were only a few feet from muzzle of "Q" turret 14-inch guns on extreme bearing and were damaged by blast.

Armour Notes.—Barbettes, 6″ and 4″ as they descend behind belts.

Searchlights.—8—24″ and 2—20″ (signalling) Harrison lamp type burners.

Aircraft Notes.—Anti-aircraft guns on after superstructure.

General Notes.—Laid down for Chile by Armstrong, in Nov. 1911, as the *Valparaiso*, her name afterwards to *Almirante Latorre*. Purchased for British Navy on outbreak of War and re Completed Sept. 1915. Additional protection, &c., added during War is said to have ra displacement to over 30,000 tons. First designed with secondary battery of 22—4·7″, and abeam aft. Re-purchased by Chile, April, 1920. Her sister ship, *Almirante Cochrane*, and taken over for British Navy in 1917, re-named *Eagle*, and modified for service as an *A* (See British Navy Section.) Arrived at Devonport in summer of 1929 to be refitted in the a special contract with new machinery supplied by Vickers-Armstrong, Ltd. Bulges fitted, bridgework underwent slight modifications. The main topmast was raised to 60 feet, and c the ends of the upper bridge: searchlights removed from bridge: new turbines and oil fuel She returned to Chile early in 1931. A catapult is mounted on the quarterdeck.

1911 BATTLESHIP (*re-purchased* 1920).

ALMIRANTE LATORRE (ex British *Canada*, ex Chilean *Almirante Latorre*, Nov., 1913). Displacement, 28,000 tons (about 32,000 *full load*). Complement, 1176.

Length (*p.p.*), 625 feet. (*o.a.*), 661 feet. Beam, 103 feet. { *Mean* draught, 28½ feet. / *Max.* „ 30 „ }

Guns (Armstrong):
- 10—14″, 45 cal.
- 14—6″ 50 cal. } Dir. Con.
- 4—4″ (anti-aircraft)
- 4—3 pdr.
- (2 landing)
- 4 M.G.

Torpedo tubes (21″):
- 4 *submerged*.

Armour:

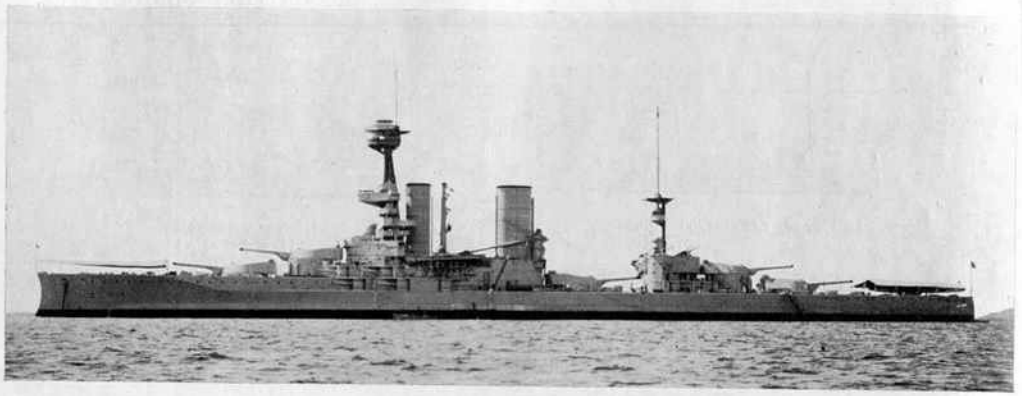
Decks:
- 1″ Shelter (over casemetes)
- 1″ Fo'xle (over battery)
- 1½″ Upper (outside battery)
- 1½″ Main (aft)
- 1″ Protective
- 2″ (forward) } lower
- 4″ (aft) }

Torpedo Protec.:
- 2″—1½″ Bulkheads (mags., &c.) Sections 6–8, 15, 19–21 on plans.

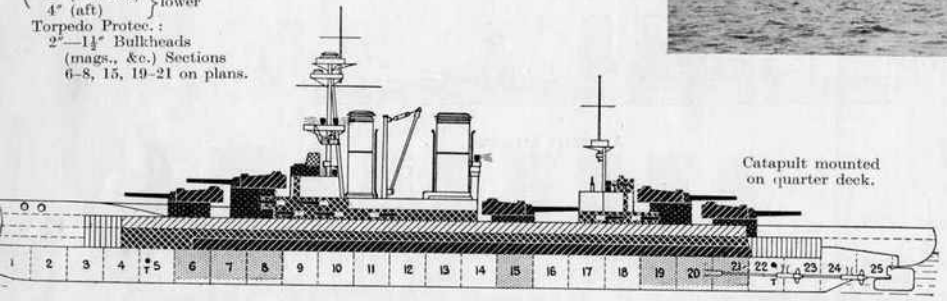
Armour:

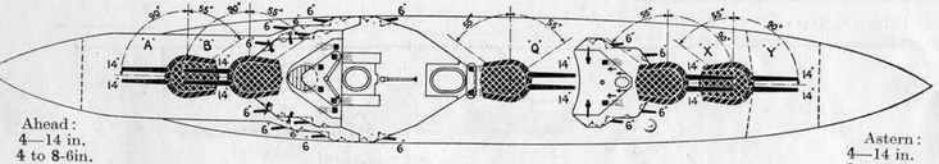
Vertical:
- 10″ Lower belt .....
- 7″ Middle belt .....
- 4½″ Upper belt .....
- 6″-4″ Belt (ends)
- 4½″, 4″ B'lkh'ds (f. & a.)
- 6″ Batteries .....
- 10″ Barbettes .....
- 10½″-9″ Gunhouses
- 3″ C.T. base* .....
- 11″ C.T. (6″—3″ hood) ..
- 6″ Fore com. tube ....
- 6″ Torpedo C.T. .....
- 6″ Aft com. tube .....

*Not shown on plans.



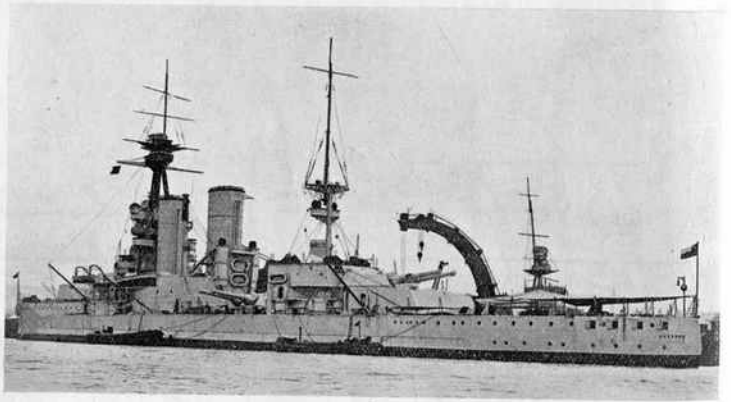
1933 *Photo, Official.*





Ahead: 4—14 in. 4 to 8-6in.

Astern: 4—14 in. 2 to 6-6in.



1931 *Photo, R. Perkins*

Broadside: 10—14 in., 7—6 in., 2—21 in. tubes.

Machinery: Turbine, 4-shaft: (L.P.) Parsons: (H.P.) Parsons. Boilers: 21 Yarrow. Designed H.P. 37,000 = 22·75 kts. Oil: tons. Endurance: 4,400 miles at 10 kts.

Gunnery Notes.—14-inch have a range only limited by *max.* visibility. Originally had 16—6 inch, but the 2—6 inch on upper deck, abeam of after funnel, were removed and ports plated over. Reason for removal was because guns were only a few feet from muzzle of "Q" turret 14-inch guns on extreme bearing and were damaged by blast.

Armour Notes.—Barbettes, 6″ and 4″ as they descend behind belts.

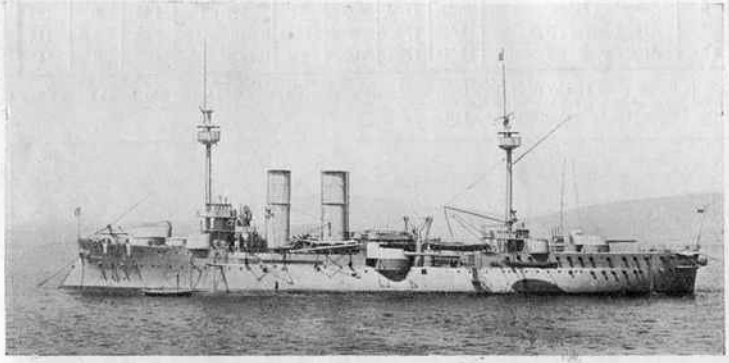
Searchlights.—8—24″ and 2—29″ (signalling) Harrison lamp type burners.

Aircraft Notes.—Anti-aircraft guns on after superstructure.

General Notes.—Laid down for Chile by Armstrong, in Nov. 1911, as the *Valparaiso*, her name being altered afterwards to *Almirante Latorre*. Purchased for British Navy on outbreak of War and re named *Canada*. Completed Sept. 1915. Additional protection, &c., added during War is said to have raised her *normal* displacement to over 30,000 tons. First designed with secondary battery of 22—4·7″, and 2 stump masts abeam aft. Re-purchased by Chile, April, 1920. Her sister ship, *Almirante Cochrane*, was purchased and taken over for British Navy in 1917, re-named *Eagle*, and remodified for service as an Aircraft Carrier. (See British Navy Section.) Arrived at Devonport in summer of 1929 to be refitted in the dockyard under a special contract with new machinery supplied by Vickers-Armstrong, Ltd. Bulges fitted, and masts and bridgework underwent slight modifications. The main topmast was raised to 60 feet, and controls fitted at the ends of the upper bridge: searchlights removed from bridge: new turbines and oil fuel only installed. She returned to Chile early in 1931. A catapult is mounted on the quarterdeck.

(1888) Coast Defence Battleship.

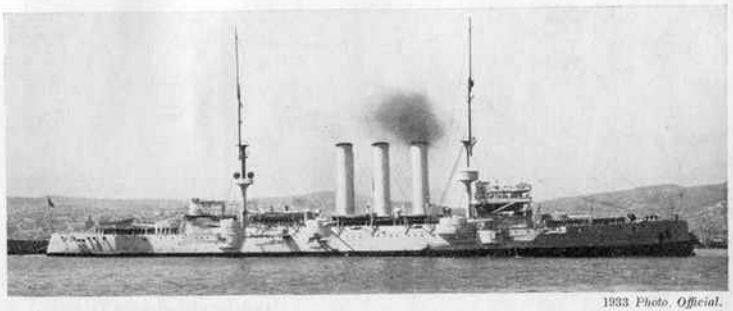
(Temporarily in use as Submarine Depôt Ship).



1919 *Copyright photo, G. Allan, Valparaiso.*

CAPITAN PRAT (La Seyne, 1890). *Reconstructed* 1909. 6902 tons (sheathed and coppered). Complement 500. Length (*p.p.*), 328 feet. Beam, 60⅔ feet. *Maximum* draught, 22⅝ feet. Guns (Canet): **4**—9·4 inch, 36 cal., **8**—4·7 inch, 45 cal., **8**—6 pdr., **1**—3 pdr., **1**—1 pdr. Torpedo tubes (18 inch): **2** *above water*. Armour (Creusot): 12″ Belt (amidships), 3″ Deck (flat on belt), 10½″ Barbettes, 2″ Barbette hoods, 4″ Redoubt (amidships), 2″ Small turrets. Machinery: 2 sets horizontal triple expansion. 2 screws. Boilers: new in 1909, 12 Babcock. H.P. 12,000 = 18 kts. (about 16 to 18 kts. now). Coal: *normal* 400 tons; *maximum* 775 tons = *circa* 4650 miles at 10 kts. *Prat* was the first ship to have electrically manœuvred turrets.

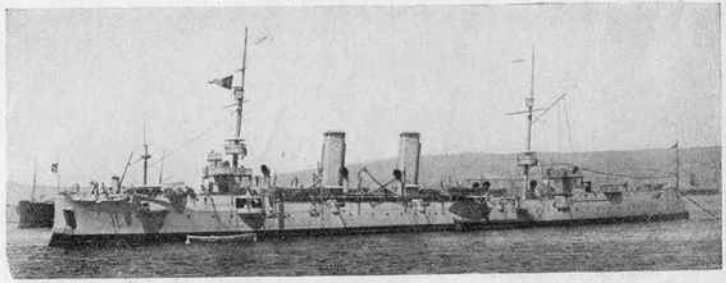
(1896) Armoured Cruiser



1933 *Photo. Official.*

GENERAL O'HIGGINS (Armstrong, 1897). 8500 tons. Sheathed and coppered. Complement 700. Length (*p.p.*), 412 feet. Beam, 62¾ feet. *Max.* draught, 22 feet. Guns (Armstrong): **4**—8 inch, 40 cal. **10**—6 inch, 40 cal., **13**—12 pdr. (**1** field), **4** M.G. Torpedo tubes (18 inch): **2** *submerged*. Armour (Harvey-nickel): 7″-5″ Belt (amidships), 2″ Deck (slopes), 7½″ Port plates to 8 inch gun turrets, 6″ Hoists to these, 6″ Gun houses to 6in. guns, 6″ Casemates (6), 9″ Conning tower. Machinery: 2 sets triple expansion. 2 screws. Boilers: 30 Belleville (in 3 groups). Designed H.P. *natural* 10,000 = 19 kts.; *forced* 16,000 = 21·5 kts. (still steams very well and can do 21 kts. now). Coal: *normal* 700 tons; *maximum* 1200 tons. Endurance: (*a*) 2250 miles at 20 kts., (*b*) 6000 miles at 10 kts. Large re-fit 1928—29.

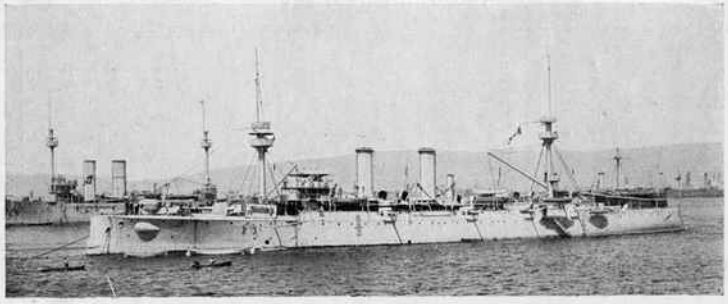
(1897) Protected Cruiser.



1919 *Copyright photo, G. Allan, Valparaiso.*

CHACABUCO (Armstrong, 1898, purchased 1902). 4500 tons. Complement 400. Length (*p.p.*), 360 feet. Beam, 46½ feet. *Maximum* draught, 17 feet. Guns (Armstrong): **2**—6 inch, 50 cal. **10**—4·7 inch, 40 cal., **5**—12 pdr., **1**—3 pdr. Armour (Harvey-nickel): 4½″ Deck (amidships), 1¾″ Deck (ends), 4½″ Fronts to 6 in. gun shields, 2½″ Sides to 6 in. gun shields, 2½″ Shields to 4·7 in. guns, 5″ Conning tower. Boilers, cylindrical. I.H.P. 15,500 = 24 kts. *forced*. Still steams well, and can do 23 kts. now. 2 screws. Coal: *normal* 300 tons; *maximum* 1028 tons. Electric training and elevating gear to 6 inch guns. Laid down at Elswick, 1897, as a speculation. Completed 1902, and purchased by Chile.

(1893) Protected Cruiser.

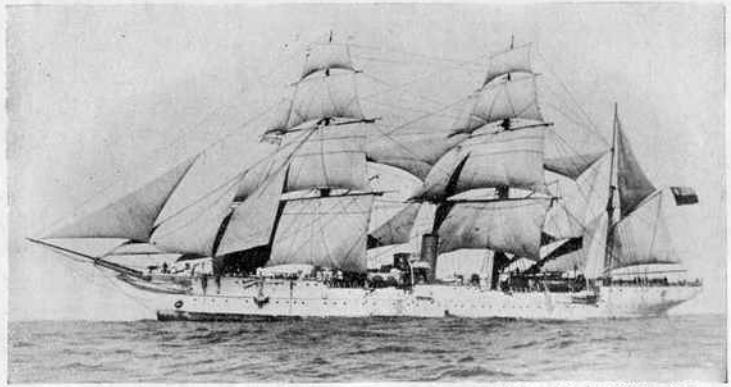


1919 *Copyright photo, G. Allan, Valparaiso.*

BLANCO ENCALADA (Armstrong, 1893). 4420 tons (sheathed and coppered). Complement 427. Length (p.p.), 370 feet. Beam, 46½ feet. *Maximum* draught, 19½ feet. Armament: **2**—8 inch, 40 cal., **10**—6 inch, 40 cal., **5**—12 pdr., **1**—1 pdr., **2** Maxims. Armour: 4″ Deck, 6″ Shields to 8″ guns, 6″ Conning tower. Boilers: cylindrical (retubed 1908-9). Designed H.P. *forced* 14,500 = 22·75 kts. (about 21·5 kts. now.) Coal: *maximum* 850 tons. Endurance: 5000 miles at 10 kts. Refitted, 1920, at Talcahuano.

Note.—Laid down Sept., 1892, launched a year later, and completed April, 1894.

Sloop (and Training Ship).



1919 *Copyright photo, G. Allan, Valparaiso.*

GENERAL BAQUEDANO (1898). 2500 tons, sheathed and coppered. Armed with **4**—4·7 inch 40 cal., **4**—6 pdr. I.H.P. 1500 = 13·75 kts. Belleville boilers (renewed 1924). Coal: 300 tons. Built by Armstrong, Whitworth & Co. Ltd. (Refitted 1923-24.)

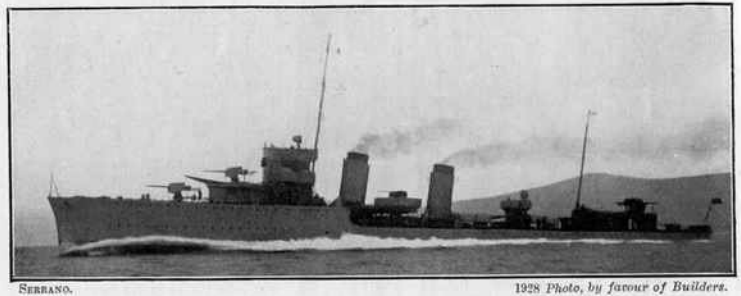
11 Destroyers.

No.	Type	Date	Displacement	H.P.	*Max.* speed	Fuel	Complement	T. tubes	*Max.* draug't
			tons.		kts.	tons			feet.
6	*Serrano* (T).	*Bldg.*	1430	28,000	35	320 oil	130	6	12⅔
3	*Alm. Riveros* (W)*	'11-'15	1730†	30,000	31·5t†	403 coal, 83 oil	205	4	11⅔
2	*Alm. Lynch* (W)	'11-'14	1730	30,000	31t	427 coal, 80 oil	160	6	11

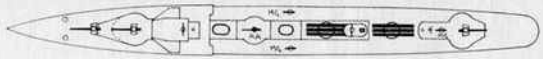
(T) = Thornycroft. (W) = White. (t) = Turbines.

*When in British Navy 1914-20, these three boats were rated as Flotilla Leaders. The two *Alm. Lynch* boats, being of much the same design, can also be rated as Leaders.

†*Average* figures. For individual details, see below.



SERRANO. 1928 *Photo, by favour of Builders.*



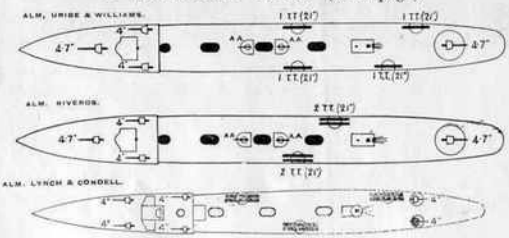
(Plan by courtesy of Messrs. John I. Thornycroft & Co. Ltd.)

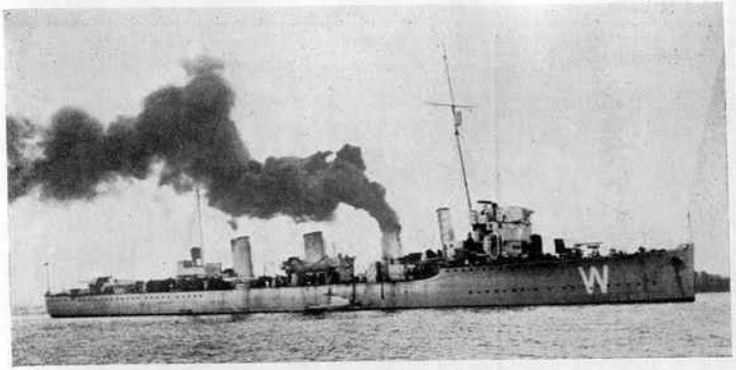
6 Serrano Class.

6 *Thornycroft* type. ***Serrano*** (Jan. 25th, 1928), ***Orella*** (March 8th, 1928), ***Riquelme*** (May 28th, 1928), ***Hyatt*** (July 21st, 1928), ***Aldea*** (Nov. 20th, 1928), ***Videla*** (Oct. 16th, 1928). All laid down June-July, 1927. "Standard" displacement, 1090 tons: *full load*, 1430 tons. Dimensions: 288½ (*p.p.*), 300 (*o.a.*) × 29 × 12¾ feet (*maximum* draught). Guns: **3**—4.7 inch, **1**—3 inch AA., **3** M.G. 2 D.C. Throwers. Tubes: **6**—21 inch, in triple deck mountings. Machinery: Geared turbines (Brown-Curtis h.p. and cruising, Parsons l.p.). Boilers: 3 Thornycroft. S.H.P. 28,000 = 35 kts. Oil fuel: 320 tons. 2 screws. Provision made for carrying mines. Complement, 130.

Notes.—These destroyers will have exceptionally good accommodation for vessels of their size, and are adapted for service in a wide range of climates. The contract, amounting to about £1,750,000, was awarded to Messrs. Thornycroft after intensive competition with many other yards British and Foreign. It is the largest foreign naval contract placed with a British yard since the War. These vessels are named after naval officers who distinguished themselves at the battle of Iquique. Plating is galvanised throughout, and the heavy hull scantlings reduce the stresses to even less than those allowed by British Admiralty practice. All this class have exceeded their contract speed on trials.

5 Almirante Class. (Next page).





ALM. WILLIAMS. *Photo, added* 1933.

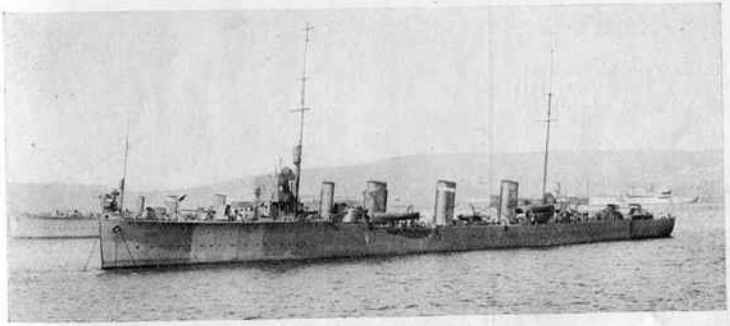
(*Uribe* has upper bridge of same width as lower, and has paravane fitting forward.)

3 *White:* ***Almirante Williams*** (ex British *Botha*; ex Chilean *Almirante Williams Rebolledo*, 1911), 1742 tons; ***Almirante Uribe*** (ex British *Broke*; ex Chilean *Almirante Goni*, 1913), 1704 tons; ***Almirante Riveros*** (ex British *Faulknor*; ex Chilean *Almirante Simpson*, 1913), 1694 tons. Dimensions: 331½ × 32½ × 11 ft. 7 in. Armament: **2**—4·7 inch*, **2**—4 inch*, **2**—2 pdr. pom-poms, **4**—21 inch tubes.† Designed H.P. 30,000 = 31 kts. in *Almirante Williams*, = 32 kts. in *Almirante Uribe* and *Almirante Riveros*. Machinery: Turbines. Boilers: White-Forster. 3 screws. Fuel: (*max.*) 403 coal + 83 oil. Complement, 205.

Note.—Another of the class, British *Tipperary*, ex Chilean *Almirante Riveros*, sunk in Battle of Jutland. The above three boats purchased August, 1914, on outbreak of war, from Chile. Re-armed by British Navy 1918-19, and re-purchased by Chile, April, 1920.

* Possibly controlled by British Navy type Light Directors.

†Tubes mounted in pairs in *Almirante Riveros*; singly mounted in *Almirante Uribe* and *Almirante Williams*.



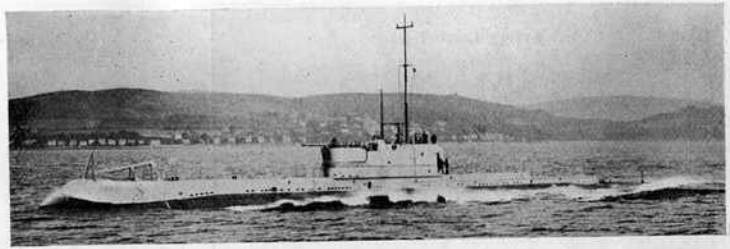
*ALM. CONDELL (centre), ALM. LYNCH (behind). *Copyright photo, G. Allan, Valparaiso.*

(Now have shorter mainmast than shown above.)

2 *White:* ***Almirante Lynch*** (1912), ***Al. Condell*** (1913). Dimensions: 320 × 32½ × 11 feet. *Normal* displacement: 1730 tons. *Full load:* 1850 tons. Armament: **6**—4 inch, **4** M.G., **6**—18 inch tubes. Designed H.P. 30,000 = 31 kts. Turbines: Parsons. Boilers: White-Forster. 3 screws. Fuel: 427 tons coal + 80 tons oil = 2750 miles at 15 kts. Trials: *Al. Lynch*, 31·8 kts. (6 hours); *Al. Condell*, 33·4 kts. Complement, 160.

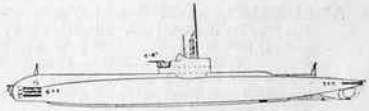
**Note to Illustrations.*—Fore funnels of *Lynch* and *Condell* now raised. All these vessels now have first letter of name painted on bow for identification purposes, *e.g.*, *W* = *Williams*, *L* = *Lynch*, etc.

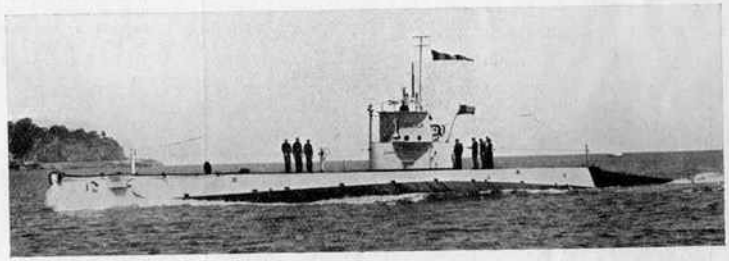
Submarines.



1930 *Photo, Courtesy of Messrs. Vickers-Armstrong.*

3 *Vickers-Armstrong:* ***Capitan O'Brien*** (October 2nd, 1928), ***Capitan Thompson***, ***Almirante Simpson,*** (both Jan. 15th, 1929). Displacement $\frac{1540}{2050}$ tons. Dimensions: 260 × 28 × 13¼ feet draught. H.P. $\frac{2750}{1500}$ = $\frac{\text{"}}{15}$ kts. Fuel: 200 tons. Guns: **1**—4·7 inch. Tubes **8**—21 inch. (6 bow, 2 stern). Of same general design as British "O" type. Built at Barrow-in-Furness, 1928-29.





H 1. 1933 *Photo, Official.*

6 *Holland:* ***H1, H2, H3, H4, H5, H6*** (Fore River Co., U.S.A., 1915-17). Displacements: $\frac{364}{438}$ tons. Dimensions: 150¼ × 15¼ × 12½ feet. H.P. $\frac{480}{320} = \frac{12.75}{10.25}$ kts. Machinery: *for surface* 2 sets 240 H.P. Nelseco Diesel engines. Endurance: 2800 miles at 11 kts. *on surface*; 30 miles at 5 kts. *submerged*. Oil: 17½ tons. Torpedo tubes: **4**—18 inch (bow). Complement 22.

Notes.—These boats were originally *H 13* and *H 16—20* of the British *H 11—20* group of submarines, built by the Fore River Co., U.S.A., during 1915. The Admiralty intended to take them over and equip them with torpedo tubes at the Canadian Vickers Co. Yard at Montreal—provided that these boats could legally be delivered in an unarmed state. The U.S. Government decided the submarines could not leave any U.S. port, so long as the United States remained neutral, and all the boats were interned at Boston. They were released on the U.S. declaration of war, 1917. With the approval of the U.S. authorities, the above six boats were ceded to Chile by Great Britain, in part payment for the Chilean warships building in British yards in August, 1914, and appropriated for the British Navy.

Gualcolda (H 1.) ***Guale*** (H 4.)
Tegualda (H 2.) ***Quidora*** (H 5.)
Rucumilla (H 3.) ***Colocolo*** (H 6.)

Submarine Depot Ship.

1933 *Photo, Official.*

ARAUCANO. Laid down by Vickers-Armstrong, Ltd., at Barrow, 1st March, 1929. Displacement: 9000 tons. Dimensions: 390 × 55 × feet draught. Guns: 2—4.7 inch, 2— AA. S.H.P. 2500 = 13 kts. Machinery: Parsons geared turbines. 1 screw. Coal: 670 tons. Has accommodation for 585, including crews of attached submarines. To be completed March, 1930.

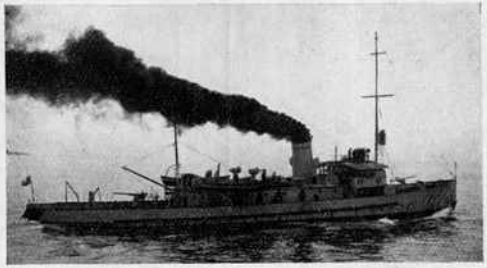
Oilers.

RANCAGUA 1930 *Photo.*

MAIPO, RANCAGUA. Laid down by Vickers-Armstrong, Ltd., on the Tyne, March, 1929. Displacement: 7715 tons (3800 tons *gross*). Complement: 54. Dimensions: 365 × 49¾ × 22½ feet draught. Guns: 2—4.7 inch. I.H.P. 4800 = 15 kts. Machinery: Triple expansion. 2 screws. 4 S.E. boilers. Oil fuel: 725 tons. Completed in March, 1930.

Note.—Old Ironclads, *Almirante Cochrane* (1874) and *Huascar* (1865), still exist at Talcahuano, being used as Depôt Ships.

Coastguard Vessels (*Escampavias*).



ELICURA. 1931 *Photo, Official.*

LEUCOTON (1919), built by Sandvikens Skeppsdocka Co., Helsingfors; **ELICURA** (1919) and **OROMPELLO** (1919), both built by Maskin och Brobyggnads Co., Helsingfors. All four completed 1919. 530 tons. Length (*o.a.*), 172·6 feet. Beam, 24·6 feet. *Maximum* draught, 11 feet. Guns: 2—3 inch. I.H.P. 1400 = 14½ kts. speed. 2 sets triple expansion engines. 2 screws. Boilers: 3 cylindrical. Coal capacity: *Leucoton* 56 tons; *Elicura* and *Orompello*, 65 tons. Complement, 42. Refitted by Messrs. J. Samuel White & Co., Cowes, 1920.

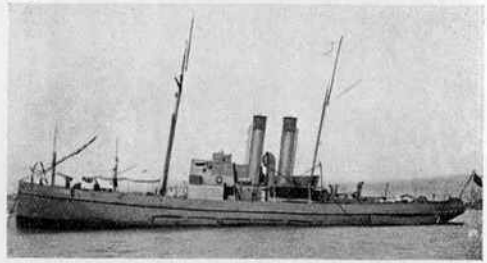
MICALVI (ex-*Bostonlincs*, ex-*Bragi*) (Ostsee Werft, Stettin, 1925). Displacement 850 tons. (612 tons *gross*). Dimensions: 181½ × 28¾ × 11 feet. Triple expansion engines. I.H.P. 380 = 9.5 kts.

AGUILA (1906). 820 tons. Speed: 10 kts.

YELCHO (1906). 280 tons. Speed: 12 kts.

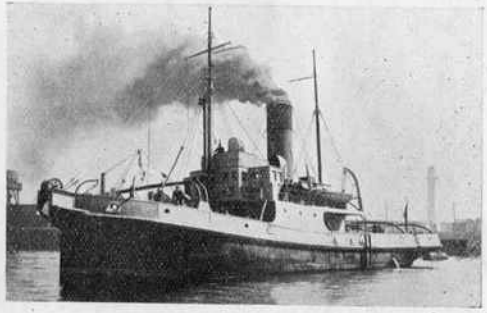
Lighthouse Tender **CONDOR.** Iron and wood. Built in Marseilles, 1889. Large refits 1927. Displacement: 145 tons. Dimensions: 102 × 18⅔ × 9 feet. Speed: 9 kts. Coal: 20 tons.

Fleet Tugs.



SIBBALD. 1931 *Photo, Official.*

SIBBALD (1916) built in Scotland. Displacement: 1,100 tons. Dimensions: 141 × 28¾ × 11 feet. *Maximum* speed: 12 kts. Coal capacity: 145 tons.



SOBENES. 1931 *Photo, Official.*

SOBENES, CABRALES (1929), **COLOCOLO, GALVARINO** and **JANEQUEO** (1930) built by Bow McLachlan. Displacement: 760 tons. Dimensions: 126½ × 27 × 12 feet (*mean*). *Maximum* speed: 11 kts. Coal capacity: 130 tons.

CHINA.

Officially revised at the Chinese Admiralty, Nanking, 1933, by courtesy of the Minister of the Navy, who has also furnished most of the photos dated 1929—1933.

Uniforms.

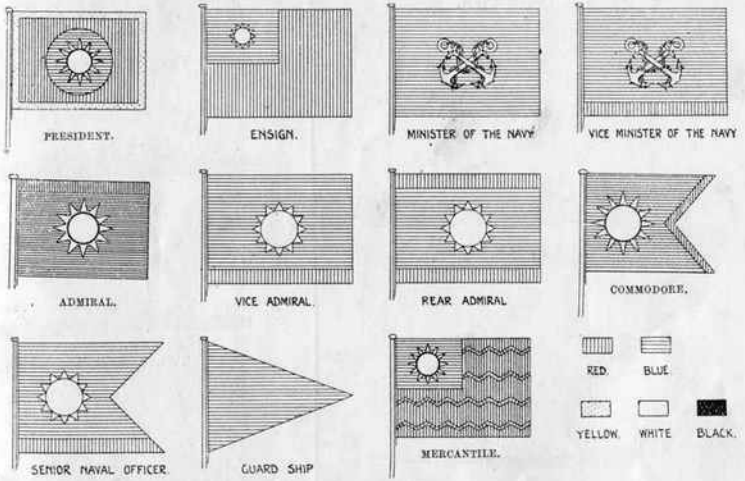
Admiral. | Vice-Admiral. | Rear-Admiral. | Commodore. | Captain. | Com-mander. | Lieut.-Comm'r. | Lieut. | Sub-Lieut. 1st Class. | Sub-Lieut. 2nd Class.

Colour between stripes :—*Engineers* (none) ; *Surgeons*, red ; *Paymasters*, white ; *Ship Constructor*, purple ; *Navigating Officers*, light indigo blue ; *Ordnance*, Pink; *Wireless*, Mauve ; *Bandmasters*, Green ; *Judge Advocates*, Grey ; *Aviation*, (none). Gold Eagle replaces emblem above stripe. All these branches *without* the curl or emblem over top stripe.

Minister of the Navy:—Admiral S. K. Chen. *Vice-Minister of the Navy*:—C. L. Chen.

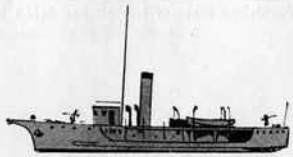
Special Note.—In July, 1929, it was requested by the Chinese Government that the services of a British Naval Mission should be lent to reorganise the Fleet. A new programme comprising 3 Cruisers, 4 Destroyers, and 2 Submarines is proposed.

Flags.



Mercantile Marine.

(From "Lloyd's Register" 1933 figures.) 257 Vessels of 399,588 *Gross* Tonnage.



KUNG SHENG.

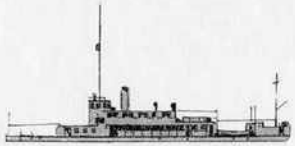
HAI-NING *class.*
10.

YUNG SHENG.
YE SHENG.
CHEN SHENG.

KIANG KUN.

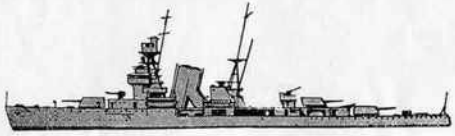
CHIEN TIEN.

SHUN SHENG.

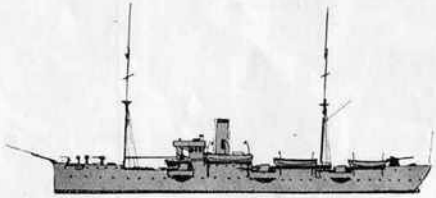


KIANG HSI.

FU AN.



NING HAI.
PING HAI.

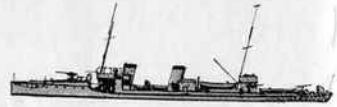


TUNG CHI.

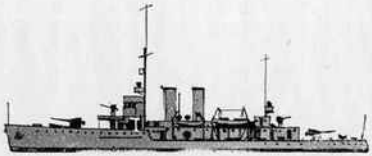
Torpedo Craft.

T.B. 2, 4.

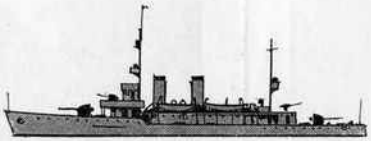
T.B. 7, 8, 9, 10.



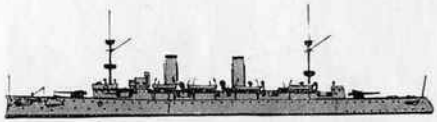
CHIEN KANG, TUNG AN.



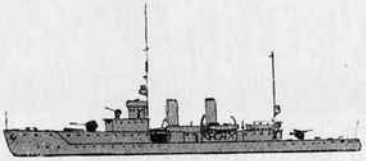
HSIEN NIN, MING CHUN.



MING-SAN.

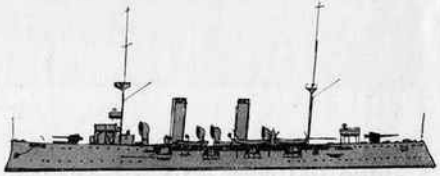


HAI CHI.



YUNG SUI.

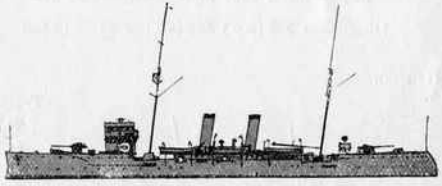
YUNG CHIEN, YUNG CHI.



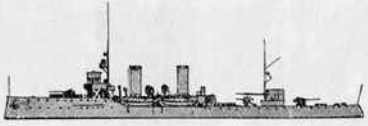
HAI YUNG, HAI CHU, HAI SHEN.

YAT SEN.

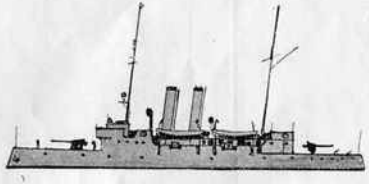
YUNG FENG, YUNG HSIANG.



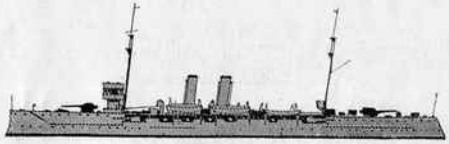
YING SWEI.



TA TUNG, TZE CHION.



KIANG CHEN *class*.
CHU CHIEN *class* (with prominent forebridge).



CHAO HO.

1931-32 Cruisers.

NING HAI 1932 *Photo, Official.*

NING HAI (Haruna D.Y., Japan. 1931).

PING HAI (Kianghan D.Y., Shanghai. 1932).

Displacement, 2500 tons. Complement 340.

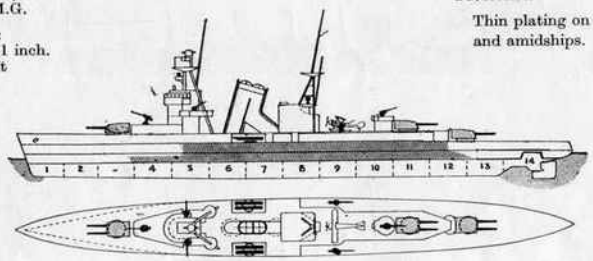
Dimensions 330 (*p.p.*) 360 (*o.a.*) × 39 × 13 feet.

Guns:
6—5·5 inch (14 c/m).
6—8 c/m. AA.
8—M.G.

Tubes:
4—21 inch.

Aircraft
2—

Protection:
Thin plating on gun houses and amidships.

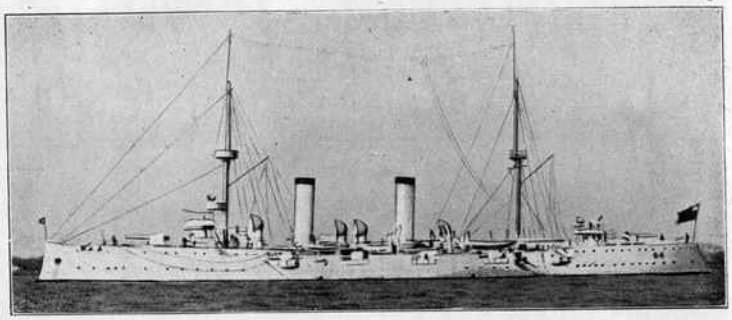


Machinery:

H.P. 9500 = 22¼ kts.

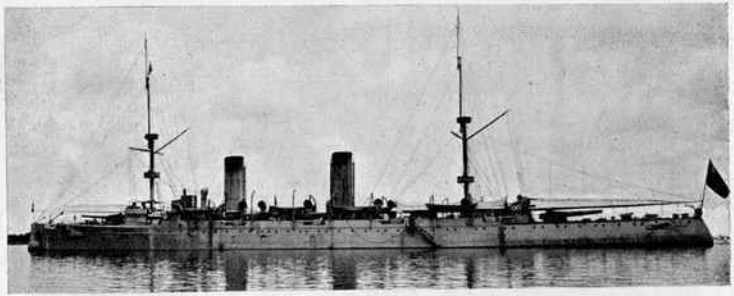
General Notes:—The above official displacement seems on the low side for the dimensions, but the design is an exceedingly interesting production and a refreshing breakaway from conventional practice. One plane is stowed in hangar at base of main mast and one as shown in plan.

1897-8 Protected Cruisers.



1923 *Official Photo.*

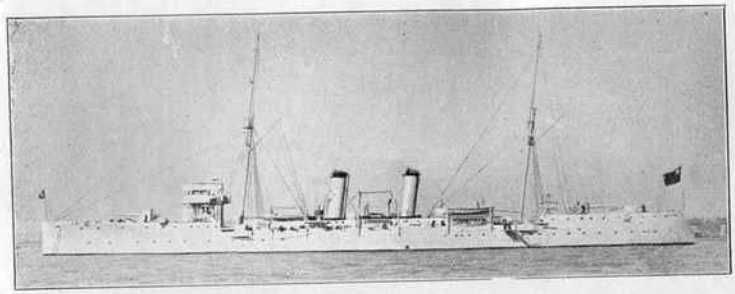
HAI YUNG (1897), **HAI CHOU** (1897) and **HAI SHEN** (1898). Displacement, 2950 metric tons. Complement, 326–343. Length (*p.p.*) 314 feet, (*o.a.*) 328 feet. Beam, 40¾ feet. *Maximum* draught, 19 feet. Guns (Krupp): **3**—6 inch, 40 cal., **8**—4·1 inch, 40 cal., **4**—3 pdr., **4**—1 pdr., **1**—2 pdr. AA. Torpedo tubes (14 inch): **1** bow (*submerged*). Armour: 2¾″ Deck (amidships), 1½″ deck (ends), 2″ gun shields, 1½″ conning tower. Designed H.P. 7,500 = 19 kts. 8 cylindrical boilers. Coal: *normal* 200-220 tons; *maximum* 500-580 tons. All three ships built by Vulkan Co., Stettin. Speed now reduced to 10 knots or less in all except *Hai Chou*, refitted 1928.



1932 *Photo, Official.*

HAI CHI (Armstrong, 1898). Displacement, 4,300 tons. Complement, 431. Length (*p.p.*), 424 feet. Beam, 46½ feet. *Mean* draught, 16¾ feet; *max.* 19 feet. Guns (Armstrong): **2**—8 inch, 45 cal., **10**—4·7 inch, 45 cal., **12**—3 pdr., **4**—1 pdr., **6** machine. Torpedo tubes (18 inch): **5** *above water*. Armour (Harvey): 5″ Deck (amidships), 1½″ deck (ends), 4½″ gun shields, 4″ ammunition hoists, 6″ conning tower. Designed H.P.: 17,000 (*f.d.*)=24 kts. Boilers: 12 cylindrical. Coal: *normal* 400 tons, *maximum* 990 tons. (Refitted, 1927).

1910 Protected Cruisers.



Ying Swei.

1929 *Official Photo.*

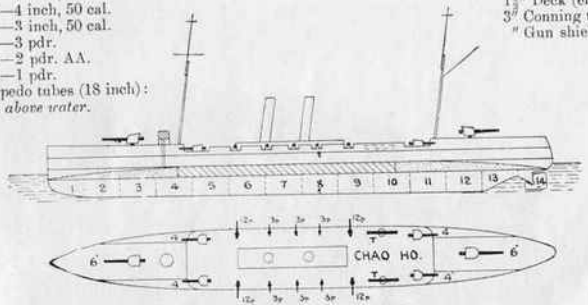
YING SWEI (July, 1911) & CHAO HO (Oct., 1911).

Normal displacement, 2460 tons; *full load* { *Ying Swei*: 2,750 tons. *Chao Ho*: 2,600 tons. } Complement, 334.

Ying Swei: Length (*p.p.*), 330 feet, (*o.a.*) 346 feet. Beam, 39½ feet. *Max.* load draught, 14 feet 11 ins.
Chao Ho: " 320 " " 39 " " " 14 "

Guns (*see Notes*):
2—6 inch, 50 cal.
4—4 inch, 50 cal.
2—3 inch, 50 cal.
6—3 pdr.
2—2 pdr. AA.
2—1 pdr.
Torpedo tubes (18 inch):
2 *above water*.

Armour:
3" Deck (amidships)
1½" Deck (ends) ...
3" Conning tower
" Gun shields.....



Ahead:
1—6 in.
2—4 in.

Astern:
1—6 in.
2—4 in.

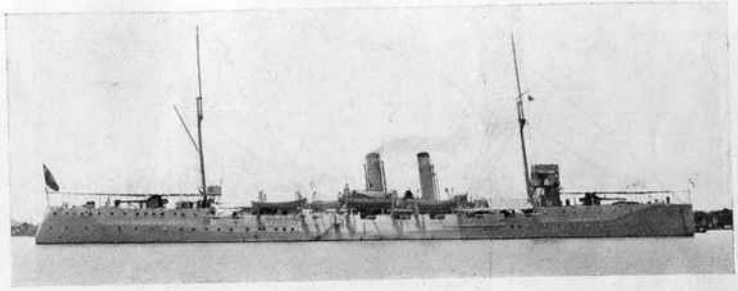
Broadside: 2—6 in., 2—4 in.

Machinery: Parsons turbine. Boilers: see notes. 4 screws. Designed H.P. 6000 = 20 kts. Coal: *normal*: 220 tons; *maximum*: 550 tons. Oil: 50 tons in *Ying Swei*, 100 tons in *Chao Ho*. Endurance: about 4500—5000 miles at 10 kts., and about 2900 miles at 18 kts.

Gunnery Notes.—Vickers models in *Ying Swei*; Armstrong in *Chao Ho*.

General Note:—Both ships employed as seagoing training vessels.

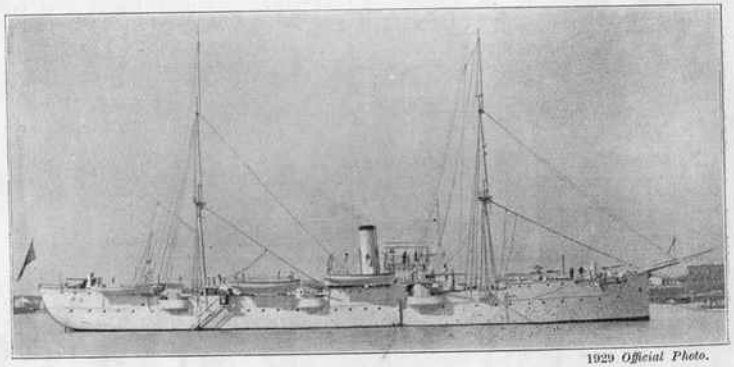
Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials (light)* ⅘ths	*Trials (Full power)*	*Boilers*
Ying Swei	Vickers-Armstrong	Vickers	1910	1912	5394=20·7	8797=22·23	White-F. + cyl.
Chao Ho		Hawthorn	1910	1912	...	8622=22·12	6 Yarrow



Chao Ho.

1932 *Photo, Official.*

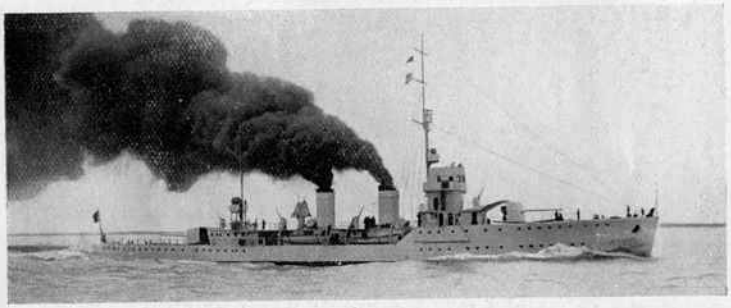
1895 Cruiser (Training Ship).



1929 *Official Photo.*

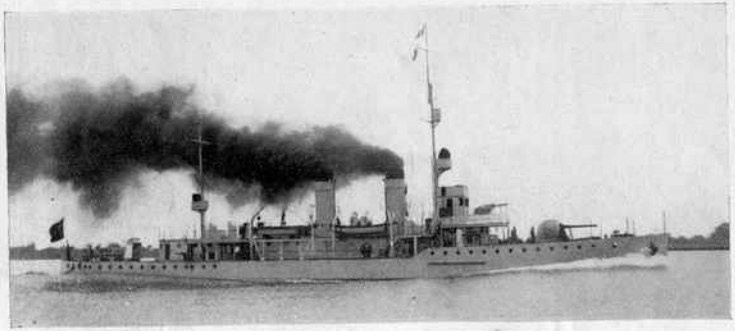
TUNG CHI (1895). Steel. 1900 tons. Dimensions: 252 × 34 × 16 feet. Guns: **2**—6 inch, **5**—4 inch, **3**—6 pdr., **8**—1 pdr. H.P. 1600 = 10.5 kts. 1 screw. Complement, 335. Built as a cruiser at Foochow, 1892-96, and later appropriated for training purposes.

1931 Light Cruiser.



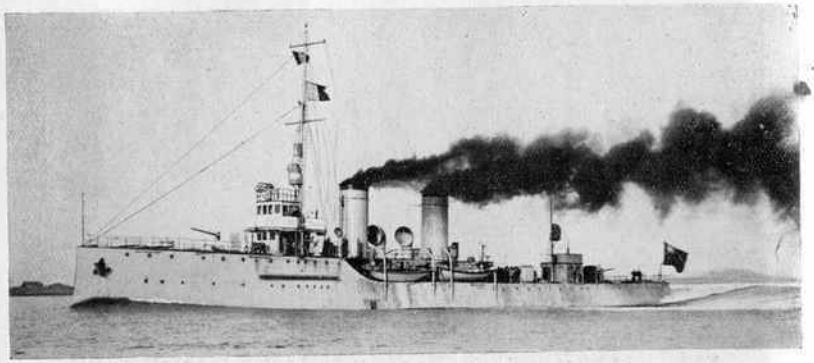
1931 *Photo, Official.*

YAT SEN (1930). Displacement, 1,650 tons. Dimensions: 275 (*o.a.*), 252 (*p.p.*) × 34 × 11 feet. Complement, 173. Guns: 1—6 inch, 1—5·5 inch, 4—3 inch A.A., 2—3 pdr., 4 M.G. Speed = 20 kts. Coal: ? tons.



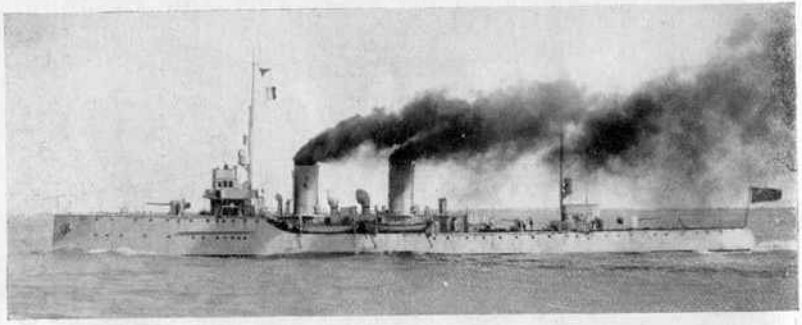
1931 *Photo.*

MING-SAN built by Kiangnan D.Y., Shanghai, 1931. Displ.: 600 tons. Dims.: 210 × 27 × 6½ feet. Guns: 1—4·7″, 1—4″, 2—3″ A.A., 2—6 pdrs. Speed: 18 kts. Coal: ? tons. Complement, 115



TZE CHION.

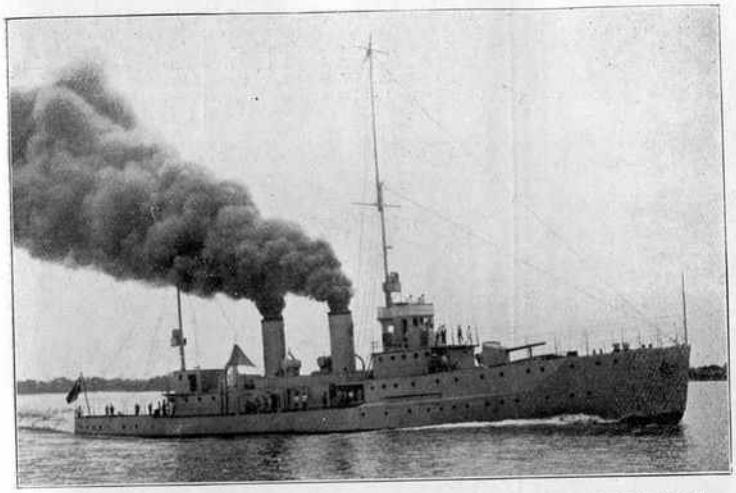
1931 *Photo, Official.*



TA TUNG.

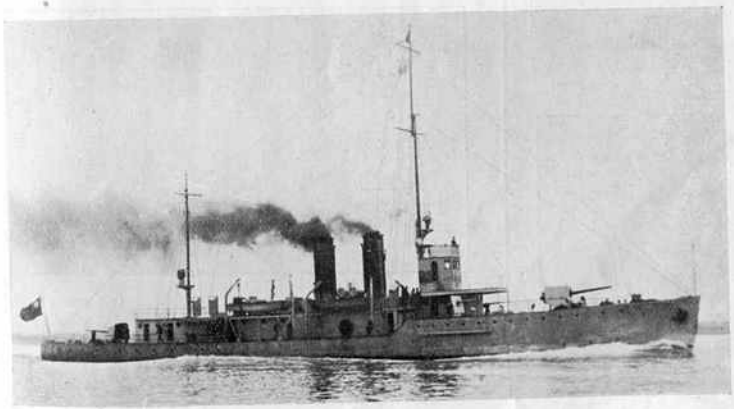
1931 *Photo, Official.*

TZE CHION (ex *Chien Wei*) (1902) and **TA TUNG** (ex *Chien An*) (1900). Displacement, 900 tons. Dimensions: 260 × 27 × 11 feet. Complement, 150. Guns: 2—4·7 inch, 1—3 inch, 2—6 pdr., 1—2 mm. A.A., 6 M.G. Torpedo tubes: 2 *above water* (may have been removed). Armour: 1″ belt and deck (amidships). Designed H.P. 6000 = 20 kts. 2 screws. Coal: 180 tons. Built at Foochow under direction of M. Doyère, who was responsible for design. Engines built by F. & Ch. de la Mediterranée, Le Havre. Guns are Schneider-Canet. Completely re-built: 1930–31.

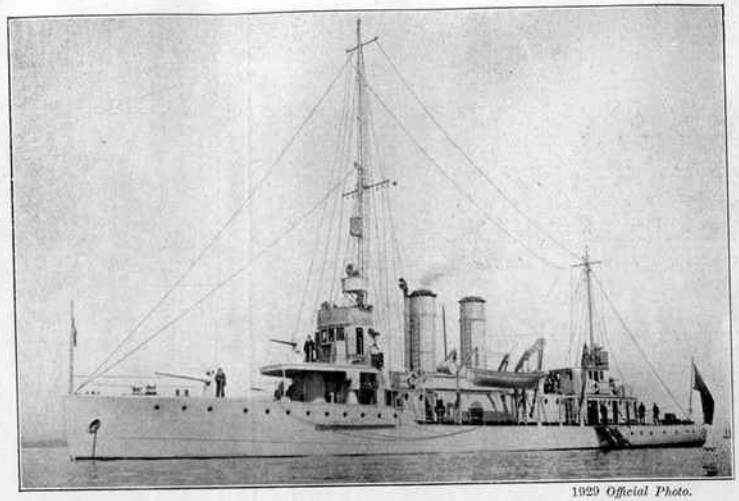


1929 *Official Photo.*

YUNG SUI. (1929). Built by Kiangnan Dock Co., Shanghai. Displacement, 650 tons. Complement, 100. Dimensions: 225 × 30 × 6 feet. H.P. 4000 = 18.5 kts. Guns: **1**—6 inch, **1**—4.7 inch, **3**—3 inch AA., **4**—6 pdr., **1**—1 pdr. pom-pom, **4** M.G.

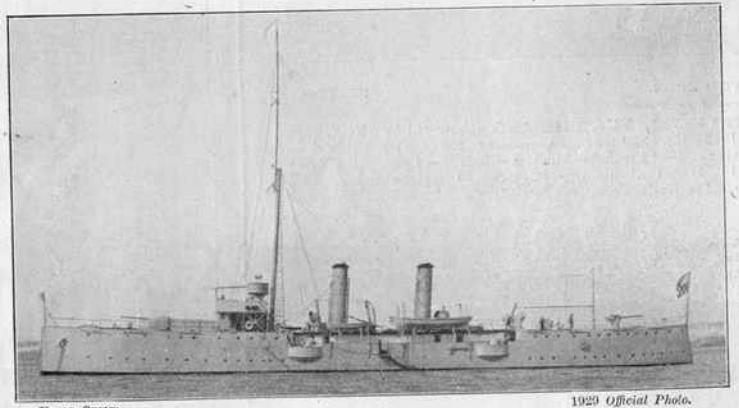


MING CHUN (1929). Displacement, 550 tons. Complement, 115. Dimensions: 196¾ × 26 × 6 feet (*mean*). H.P. 2200 = 17.3 kts. Guns: **1**—4.7 inch, **1**—4 inch, **1**—3 inch, **2**—6 pdr., **1**—1 pdr. pom-pom, **4** M.G.



1929 *Official Photo.*

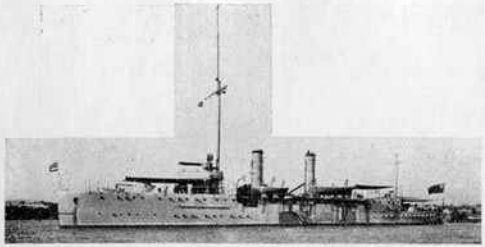
HSIEN NIN (Kiangnan Dock Co., Shanghai, Aug. 16, 1928). Displacement, 418 tons. Complement, 115. Dimensions: 170 (*p.p.*), 180 (*o.a.*) × 24 × 6½ feet. H.P. 2500 = 17 kts. Guns: **1**—4.7 inch, **1**—4 inch, **3**—6 pdr., **5** M.G. Cost: $300,000.



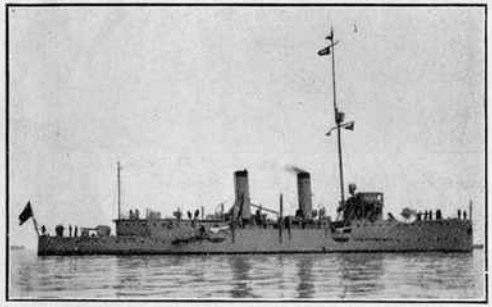
1929 *Official Photo.*

YUNG CHIEN.

YUNG CHIEN, YUNG CHI (Built 1915, by Kiangnan Dock Co., Shanghai). 860 tons. Dimensions: 205 (*p.p.*), 215½ (*o.a.*) × 29½ × 11½ feet. Guns: **1**—4 inch, **1**—3 inch, **4**—3 pdr., **2**—1 pdr., **1**—2 pdr. AA. Designed H.P. 1350 = 13 kts. Coal: 150 tons. Complement, 105.

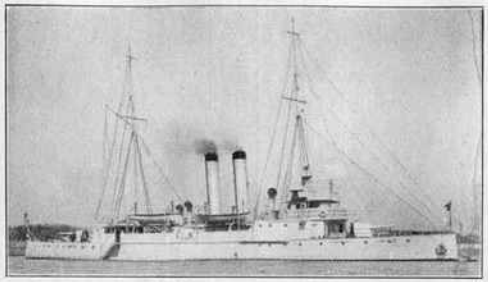


YUNG-FENG. 1921 *Photo, Rear-Admiral Ngen-Tao.*

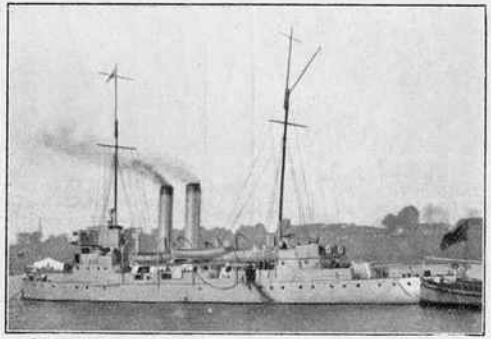


YUNG HSIANG. 1928 *Photo.*

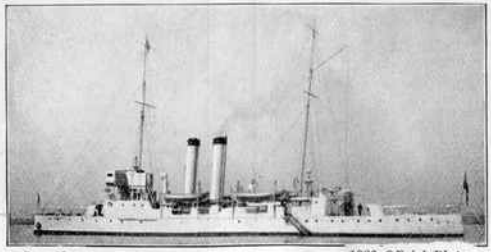
YUNG FENG, YUNG HSIANG (Kawasaki Co., Kobé, Japan, 1912—13). 830 tons. Dimensions: 205 (*p.p.*) × 29½ × 8 feet. Guns: **1**—4·1 inch, **1**—3 inch, **4**—3 pdr., **2**—1 pdr. H.P. 1350 = 13·5 kts. Coal: 190 tons. 2 screws. Complement, 105. 1 inch steel protective deck.



CHU TUNG. 1929 *Official Photo.*



CHU KUAN. 1929 *Photo*



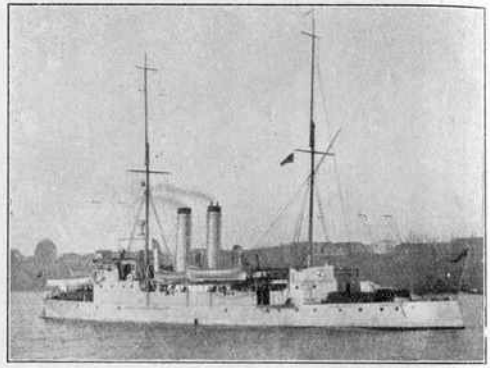
CHU YEW. 1929 *Official Photo.*

CHU CHIEN. CHU TAI. CHU YU.
CHU KUAN. CHU TUNG. CHU YEW.

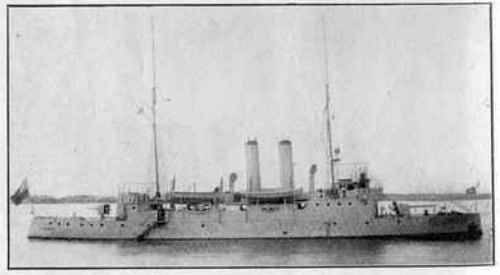
(For description see next column.)

All built by Kawasaki Yard, Kobé, 1906-07. 740 tons. (*Chu Yew*, 745 tons.) Complement, 123-135. Dimensions: 200 × 30 × 8 feet. Armament: **2**—4·7 inch, **2**—3 inch, **3**—6 pdr., **1**—2 pdr. AA., **2** M.G. (*Chu Yew* has **5**—9 pdr., **4**—1 pdr., **1**—1 pdr. AA. in place of latter 3 items.) Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: Water-tube. Designed H.P. 1350 = 11 kts. (*Chu Yew*, 12 kts.). Coal: 150 tons.

Note.—Several of these vessels have been fitted with additional protection for gun crews. Speed in some cases is only about 9 kts. now.



KIANG CHEN. 1929 *Photo.*

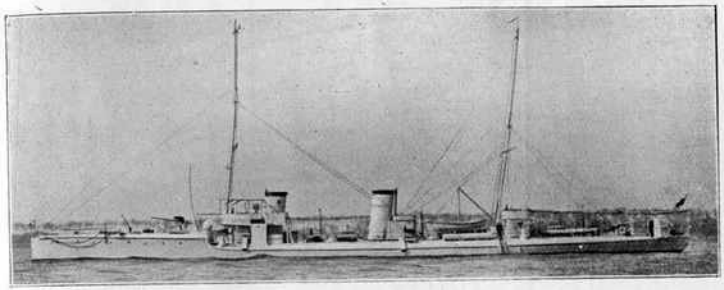


KIANG YUAN. 1929 *Official Photo.*

KIANG CHEN **KIANG LI**
KIANG HENG **KIANG YUAN**

All built by Kawasaki Yard, Kobé, 1906-07. 550 tons. Complement, 106-123. Dimensions: 170 (*p.p.*), 180 (*o.a.*) × 28 × 7 feet. Armament: **1**—4·7 inch (bow), **1**—3 inch (aft), **4**—3 pdr., **4**—Maxims. Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: Water-tube. Designed H.P. 950 = 13 kts. (reduced to 10 kts. in some). Coal: 113 tons.

Destroyers.



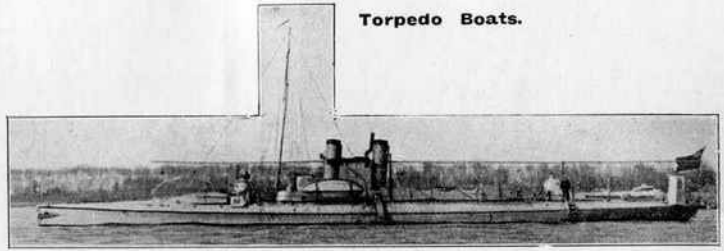
1929 *Official Photo.*

2 *Schichau* type: ***Chien Kang, Tung An,*** (1912), 390 tons. Dimensions: 198 (*p.p.*), 208 (*o.a.*) × 21½ × 10 feet. Armament: 2—3 inch, 4—3 pdr., 2—18 inch tubes. Designed H.P. 6000=32 kts. Coal, 80 tons. Complement, 83.

First called *Fu Po*, and *Fei Hung* but names were altered by Yuan Shih Kai.

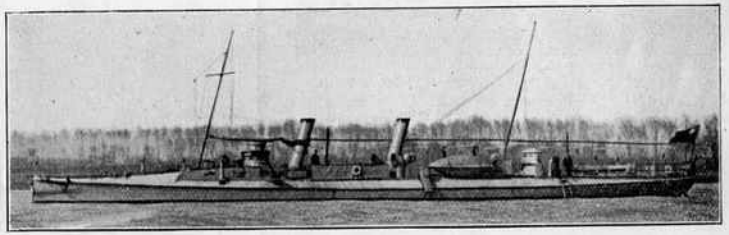
Yu Chang, wrecked 1932.

Torpedo Boats.



1929 *Official Photo.*

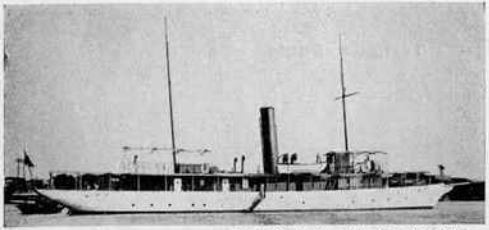
4 *Kawasaki–Normand* type: ***Hu Peng*** or ***No. 7, Hu Oah*** or ***No. 8, Hu Ying*** or ***No. 9, Hu Chun*** or ***No. 10*** (Kobe, Japan, 1907-8). 96 tons. Dimensions: 135×15½×7½ feet. Armament: 1—3 pdr., 1—1 pdr., 3—14 inch tubes (1 bow *above water* and 2 deck). Designed H.P. 1200=23 kts. Coal, 28 tons *normal*. Complement: 41. Some can only do about 13 kts. now.



1929 *Official Photo.*

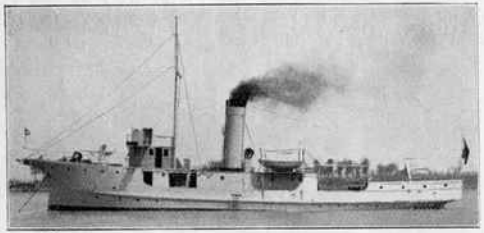
2 *Vulcan* type: ***Su***** or ***No. 4, Chen***** or ***No. 2*** (1895). 90 tons. 144×17×8 feet. Armament: *Su*, 3—1 pdr.; *Chen*, 2—1 pdr.; both 2 M.G. and 2—14 inch torpedo tubes. H.P. 700 = 18 kts. (now reduced to 10 kts.). Complement, 40.

* These two T.B. sometimes have suffix *Ting* (Boat) or *Tzu* (meaningless) added to their names.



1921 *Photo, Rear-Admiral Ngen Tao.*

WU FENG (Tsingtao, 1912). 200 tons. Dimensions: 124 × 20 × 7 feet. H.P. 300 = 10 kts. Guns: 4—3 pdr. Complement, 46.

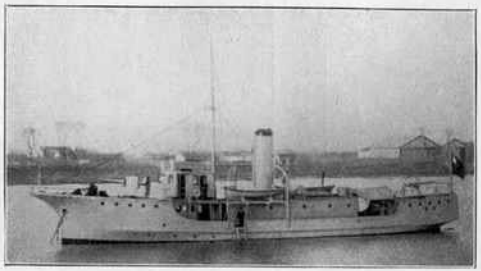


1929 *Official Photo.*

YE SHENG (1911). Displacement, 350 tons. Complement, 37. Dimensions: 120½ × 20½ × 11 ft. H.P. 500 = 10 kts. Guns: 1—9 pdr., 1—6 pdr., 2 M.G.

1930 *Official Photo.*

SHUN SHENG (1911). Displacement, 380 tons. Complement, 67. Dimensions: 146 × 24½ × 6 feet. H.P. 500 = 10·7 kts. Guns: 1—8 c.m., 1—7·5 c.m., 2—3·7 m.m. 4 M.G.

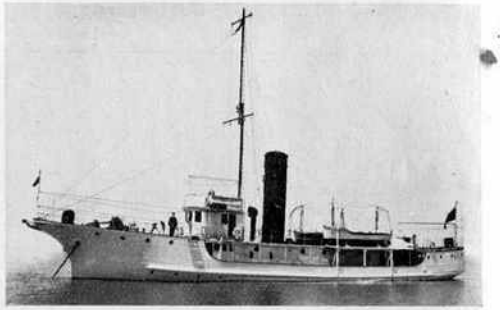


1929 *Official Photo.*

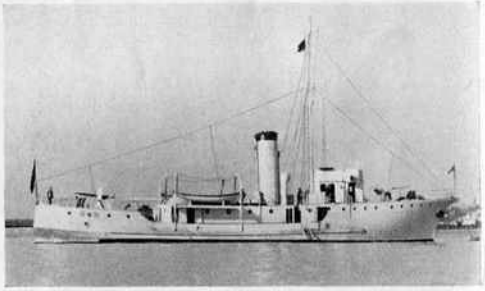
YUNG SHENG (1928). *Normal* displacement, 300 tons. Complement, 42. Dimensions: 125 × 21 × 7 feet. H.P. 500 = 10 kts. Guns: 1—3 inch, 1—6 pdr., 2 M.G.

HAI-NING 1933 *Photo, Official.*

10 boats. **HAI-NING, KIANG-NING** (both completed 1933) **WU-NING, SUI-NING, WEI-NING, CHUNG-NING, SUH-NING, YI-NING, CHEIN-NING, CHANG-NING.** (All built or building by the Shanghai Navy Yard.) Displacement: 300 tons. Dimensions: 128 (*o.a.*) × 20 × 6 feet. Speed: 10 kts. Coal burning. Guns: 2—6 pdrs. 3 M.G. Complement, 44.

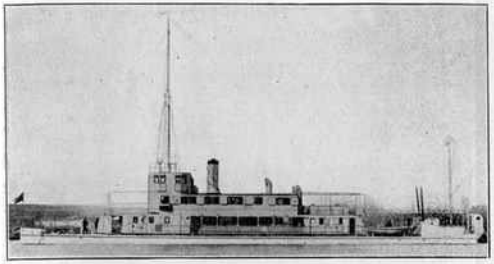


KUNG SHENG 1930 *Official Photo.*



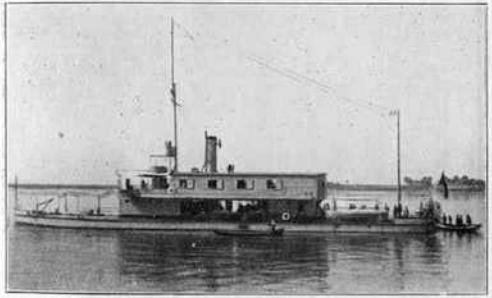
JEN SHENG 1931 *Official Photo.*

KUNG SHENG (ex Chin Tien) (1911). **JEN SHENG** (1931). Complement, 47. Dimensions: 120 × 21 × 7·5 feet. Displacement 300 tons. H.P. 500 = 10 kts. Guns: 1—8 c.m., 1—6 pdr. 2 M.G.



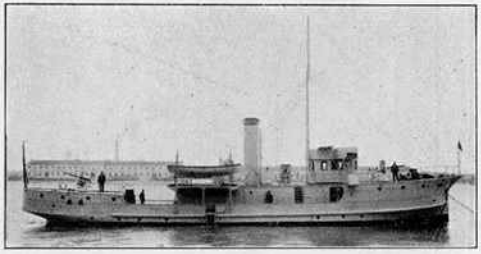
1929 *Official Photo.*

KIANG HSI (Krupp, 1911). Displacement : 150 tons. Dimensions : 144 × 25 × 3 feet. H.P. 450 = 9 kts. Boilers : 2 Schulz. Coal : 35 tons. Guns : **1**—3.4 inch howitzer, **1**—1 pdr., **4** M.G. Complement, 58.



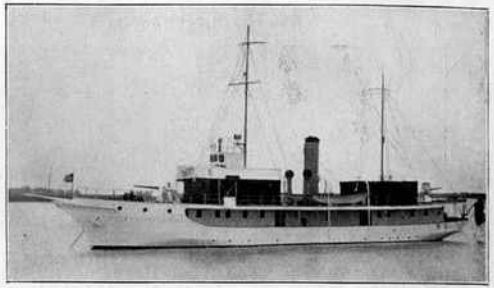
1929 *Photo.*

KIANG KUN (Vulkan, 1912). Displacement, 140 tons. Dimensions : 146 (*p.p.*) × 26 × 2 feet. H.P. 500 = 10 kts. Boilers : 2 Schulz. Coal : 30 tons. Guns : **1**—3.4 (22 pdr.) howitzer, **1**—1 pdr., **4** M.G. Complement, 48.



1929 *Official Photo.*

CHEN SHENG (1899). Displacement, 275 tons. Complement, 42. Dimensions : 120 × 20 × 7 feet. H.P. 400 = 10 kts. Guns : **1**—6 pdr., **1**—3 pdr., **2** M.G.

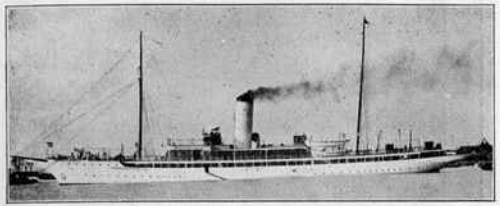


1929 *Official Photo.*

CHIEN TIEN ex-*Kung Sheng* (1922). *Normal* displacement, 279 tons. Complement, 53. Dimensions : 145 × 20½ × 7 feet. H.P. 200 = 8.5 kts. Guns : **1**—3 inch, **1**—6 pdr., **2** M.G. (Surveying Service).

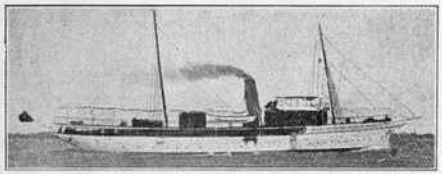
SURVEYING VESSELS AND TRANSPORTS.

Surveying Vessels.



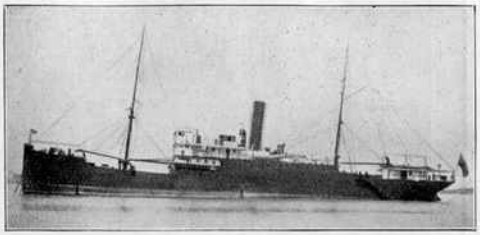
1929 *Official Photo.*

KAN LU. (ex-*Atalanta* ex-*Lorena*). 1903 Leith. Displacement, 2132 tons. Dimensions: 300 × 33½ × 18 feet. Guns: **2**—3 inch. Diesels, B.H.P. 1500 = 12·75 K.B. Oil = 300 tons. Bought 1925.

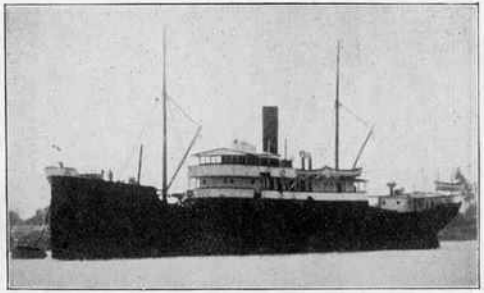


LIEN CHING (Shanghai, 1910). 500 tons. Dimensions: 150 (*p.p.*), 173 (*o.a.*) × 25 × 10 feet (*mean*). I.H.P. 800 = 12 kts. Cylindrical boilers fitted with Howden's f.d. Coal: 95 tons. Guns: **4**—3 pdr., **2** M.G. Complement, 91.

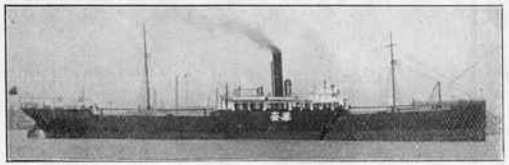
Transports.



CHING AN (1906). Displacement, 4000 tons. Dimensions: 272 × 40 × 17¾ feet. H.P. 1160 = 11 kts. Guns: **2**—6 pdr. Complement, 235.

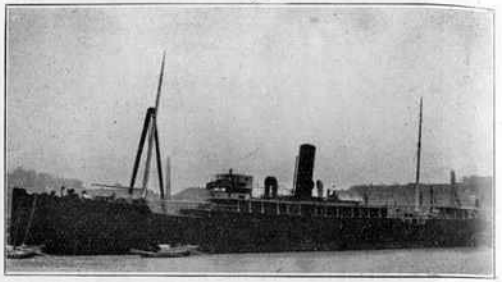


TIN AN (1901). Displacement, 2011 tons. Dimensions: 230 × 33 × 18 feet. H.P. 918 = 11 kts. Complement, 70.

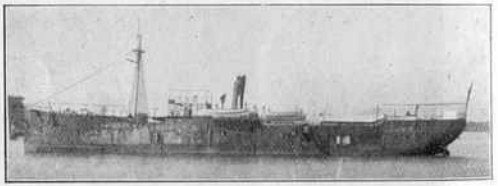


HWA AN (1899). Displacement, 10,573 tons. Dimensions: 414 × 46 × 24½ feet. H.P. 5000 = 11 kts. Guns: **2**—3 pdr. Complement, 136.

Transports—*continued*,

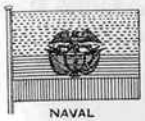


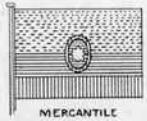
PU AN (1896). Displacement, 4600 tons. Dimensions: 393 × 45 × 25 feet. H.P. 6500 = 15 kts. Guns: **1**—3 inch. Complement, 137.



FU AN. Built by Fu-Chau D.Y., 1894. Displacement: 1700 tons. Dimensions: 250 × 38 × 18 feet. Guns: **2**—6 pdr., **2**—1 pdr. I.H.P. 1600 = 10 kts. speed. Coal: 170 tons. Complement, 105.

COLOMBIA.





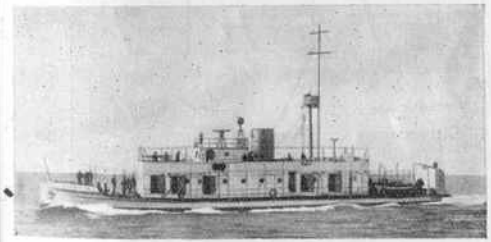
Red
White
Blue
Yellow

Gunboat.

Photo wanted.

CHERCINTO (1896). 643 tons. Dimensions: 185 (*p.p.*) × 31 × 12 feet. Guns: not known. Designed H.P. 400 = about 12 kts.

River Gunboats.



CARTAGENA, SANTA MARTA, BARRANQUILLA. (1930)

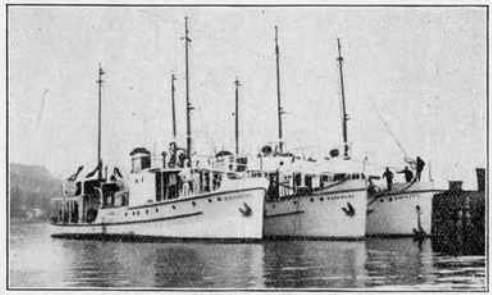
Dimensions: 137′ 9″ × 23′ 6″ × 2′ 7″ (41·9 × 7·16 × ·8 m). Guns: 1—75 mm., 4 M.G. Machinery: 2 semi-Diesel Gardner engines each 300 B.H.P. at 290 revs. Speed = 15·5 kts. 2 screws working in tunnels.

Notes.—These three vessels crossed the Atlantic under their own power without mishap, making the voyage from the Clyde to the Magdalena in 24 days with only one stop (St. Vincent). They represent an extraordinarily efficient type of shallow draft gunboat, incorporating many improvements on previous types. The designed speed has been exceeded on trial and is very high for this type of craft. Hull is of galvanised steel, and machinery spaces, cabins and magazines are of bullet proof plating. Ventilation and refrigerating plant designed to secure excellent habitability.

Photo wanted.

ESPERANZA (1897), **GENERAL NERINO** (1895), both built at Perth Amboy, U.S.A. Stern-wheelers of 400 tons. Dimensions: 140 (*p.p.*) × 9 × 3 feet. Guns: **3** M.G. Designed H.P. 430 = 15 kts. No other details known.

Coastguard Patrol Vessels.



PICHINCHA, CARABOBO, BOYACA. 1927 *Builders' Photo, by courtesy of M. Le Masson.*

BOYACA (July 8th, 1925), **CARABOBO** (August 8th, 1925), **PICHINCHA** (Sept. 5th, 1925). All built by Soc. Anon. des Chantiers et Ateliers de St. Nazaire (Penhoët), at Rouen. Dimensions: 100 × 20 × 8½ feet. Triple expansion engines and oil-burning water-tube boilers by Messrs. Thornycroft. Speed: 13 kts.

M. L. (*Motor Launches*).

Cauca (1913). 50 tons. Dimensions: 110 × 17 × 4 feet. Guns: Not known. Speed, 12 kts.

Guarda Costas 1, 2, 3, 4 (Yarrow, 1913). 20 tons. Dimensions: 80 × 12½ × 3½ feet. Guns: **1**—1 pdr. H.P. 160 = 12 kts. Fuel: 1800 galls. petrol = 2400 miles at 10 kts.

Old Transport *Bogota* is still in service.

Brassey (1933) gives also—:

PRESIDENTE MOSQUERA. Gunboat. 200 tons.

6 Revenue Cutters building at Thornycrofts. And mentions a report that *Pichincha* and *General Nerino* have been sunk by the Peruvians.

CUBA.

A Government dockyard is projected in Havana Bay, near the Tiscornia. To have a 4000 ton Floating Dock. Naval Academy at Mariel to be transferred to vicinity of Dockyard.

Private Docks: At Havana, private floating dock (U.S. and Cuban Allied Works Engineering Corp.) 360×66×17½ feet (5600 tons); also Havana Marine Co. has a slipway 3,000 tons capacity.

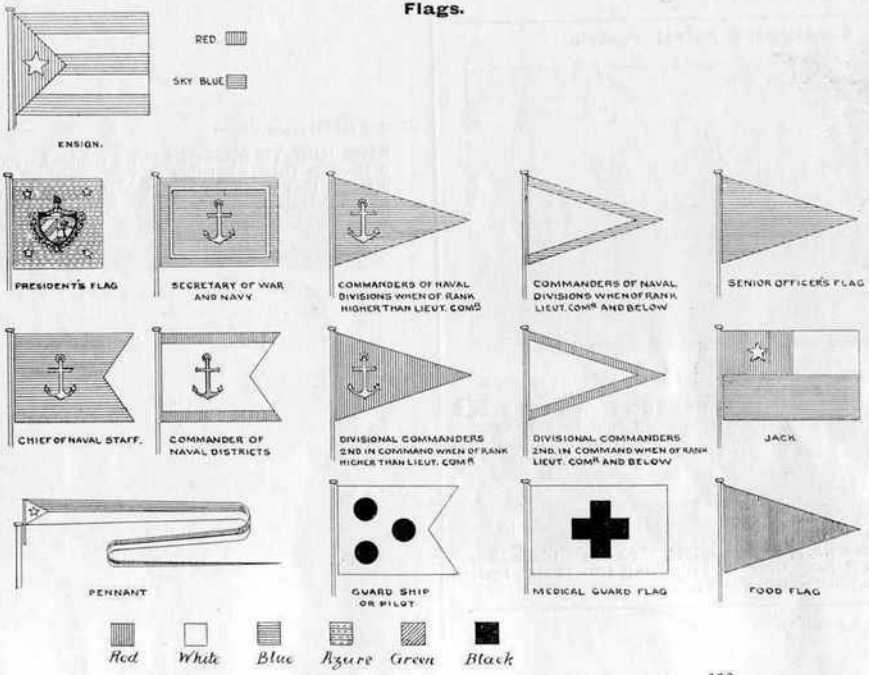
Minister of War and Navy:

Personnel: Officers, Line 65; Engineers 49, Paymasters 8, Surgeons 8, Judge-Advocates 2=132. Men 1050.

Mercantile Marine.

43 vessels of 33,337 gross tonnage.

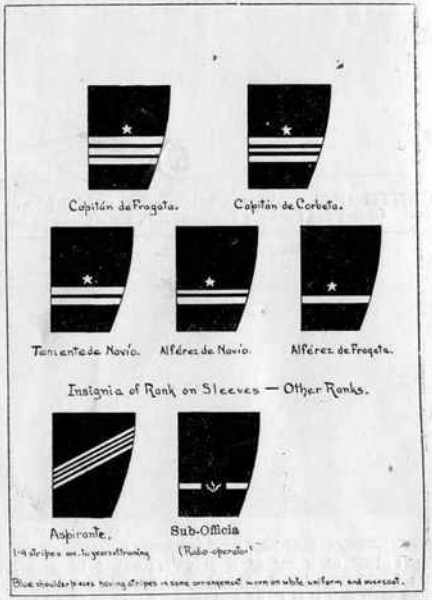
Flags.



Uniforms.

Insignia of Rank on Sleeves—Executives

CAPITAN DE NAVIO.

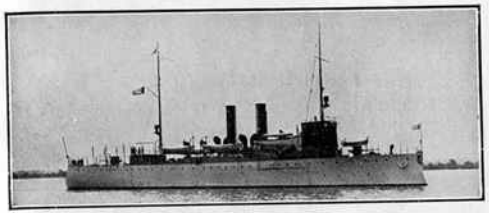


New Construction.

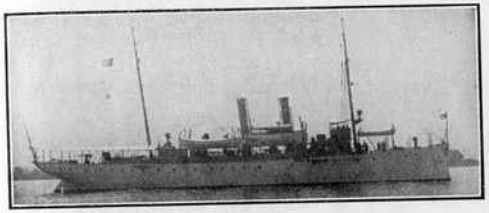
The following programme has been recommended, to involve an expenditure of 7,220,000 pesos, spread over a period of ten years:—

1 cruiser of 4,500—5,000 tons.
1 „ „ 2,500 tons.
8 gunboats of 900 tons.
8 „ „ 200 tons.

Cruisers.



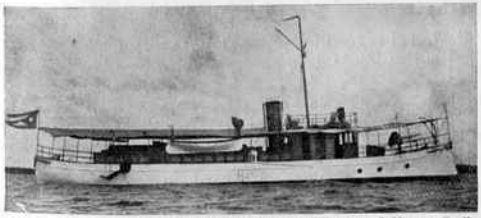
CUBA (Cramp, Philadelphia, 10th August, 1911). 2055 tons. Dimensions: (*p.p.*) 260×39×14 feet. Armament: **2**—4 inch, **6**—3 inch, **4**—6 pdr., **4**—3 pdr., **2** machine. H.P. 6000=18 kts. Babcock boilers. Coal: 250 tons.



(Training Ship.)

PATRIA (Cramp, Philadelphia, 10th August, 1911). 1200 tons. Dimensions: 200 (*p.p.*) × 36 × 13 feet. Guns: **2**—3 inch (Bethlehem), **4**—6 pdr., **4**—3 pdr., I.H.P. 4000=16 kts. Babcock boilers. Coal: 150 tons.

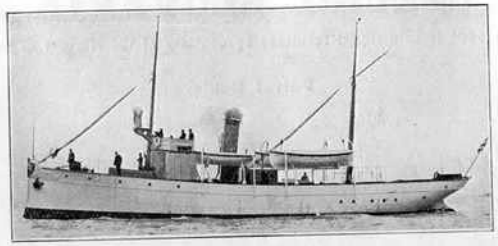
Gunboats.



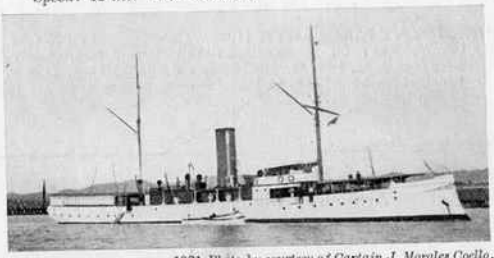
1921 *Photo, by courtesy of Captain J. Morales Coello.*

HABANA (1912) and **PINAR DEL RIO** (1912). Both wooden vessels of 80 tons, built at Havana. Dimensions: 100 × 18 × 6 feet. Guns: **1**—1 pdr. I.H.P. 200= 12 kts. 1 screw. Coal: 20 tons.

Gunboats—*continued.*



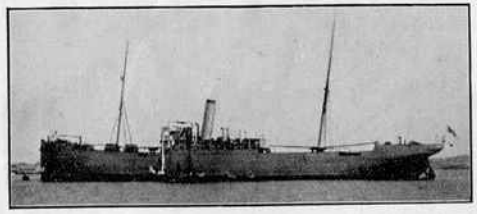
DIEZ DE OCTUBRE (J. Samuel White, Cowes, 1911), **VEINTE Y CUATRO DE FEBRERO** (J. Samuel White, Cowes, 1911). 218 tons. Dimensions: 110 × 20 × 8 feet. Guns: **3**—3 pdr. Speed: 12 kts. Coal: 50 tons.



1921 *Photo, by courtesy of Captain J. Morales Coello.*

BAIRE (Klawitter Yd., Danzig, 1906). 500 tons. Dimensions: 196 × 23 × 9 feet. Guns: **4**—3 inch, **2**—3 pdr. H.P. 1200 = 14 kts. Babcock boilers. Coal: 120 tons. (Used as Presidential Yacht.)

Naval Transport.



1925 *Photo, by courtesy of Captain J. Morales Coello.*

MAXIMO GOMEZ (ex-German s s *Constantia*, built by Barclay, Curle & Co., Glasgow, 1890). Acquired 1923. 3026 tons *gross*. 330½×41¾ × 26¼ feet. H.P. 1600 = 11 kts. Guns: **4**—3 inch, **2**—3 pdr.

Coast Guard Patrol Vessels.

MATANZAS (1912), **VILLAS** (1912). Details as *Habana* and *Pinar del Rio*; differ in appearance.

ENRIQUE VILLUENDAS (Chester, U.S.A., 1899). 178 tons. 132×20×9 feet. Guns: **2**—3 pdr. I.H.P. 600=16 kts. Coal: 55 tons.

ALFREDO (Seabury, New York, 1896). Wood. 40 tons. Dimensions: 60×12×6 feet. Guns: **1**—1 pdr. Speed: 11 kts.

YARA (Middlesborough, 1895). 449 tons. 155×26×13 feet. Guns: **2**—6 pdr., **2**—3 pdr. I.H.P. 600=12 kts. Coal: 150 tons.

MACEO (ex-Spanish gunboat, 1896). Wood. 35 tons. Dimensions: 75×10×5½ feet. Guns: **1**—1 pdr. Speed, 10 kts. Coal: 8 tons.

VEINTE DE MAYO (Glasgow, 1895). 203 tons. 141×18·5×10·5 feet. Guns: **2**—3 pdr., **2**—1 pdr. I.H.P. 500=12 kts. Coal: 50 tons.

1 Patrol Boat (building) 115 tons. 3 guns.

As Illustration for "SC-boats," U.S. Navy Section.

No. 1 (ex U.S. *SC 274*, Mare Island, Navy Yd.). **Nos. 2—4** (ex U.S. *SC 302, 311, 312*, Puget Sound, Navy Yd.). All built 1917-18. About 77 tons. Dimensions: 105 (*w.l.*) ×14¾×5¼ feet. Guns: **1**—3 inch (23 cal.), **2** Colt M.G. B.H.P. 660 = 16¾ to 18 kts.† Fuel: 2400 gallons petrol. Engines: 3 sets Standard motors.† Wooden hulls.

Note.

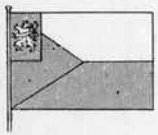
All 4 now employed for Coastguard duties, but on account of scarcity and high cost of fuel, are only used in emergency when high speed is required.

† Plans worked out for replacing motors by small boilers and reciprocating engine.

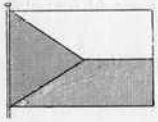
K

CZECHO SLOVAKIA.

Compiled 1931 from material furnished by courtesy of the Minister of Defence.



National.



Ensign.

Administration.

Minister of Defence: Dr. Viskovsky.
Chief of the Naval Staff:
Naval Military Attaché in London: Major-General Stephen Andreas.
The Danube flotilla is under the control of the Engineer in Chief.
Principal Base = Gratislava.
Principal Private Establishment, the Skodavy Závody Lodenice (late Hungarian M.F.T.R.).

Ranks.

Colonel	=	Plukovnik	Captain	=	Kapetan
Lt.-Colonel	=	Podplukovnik	Lieut.	=	Nadporučnik
Major	=	Major	Sub.-Lt.	=	Podaćnik
Sen. Captain	=	Stabný Kapetan			

Uniform Cap = same as Army
Crew = Naval cap
Defence Estimates, 1931–32 = kc. 1,715,000,000
Personnel = circa 400 men
Colour of ships = light grey

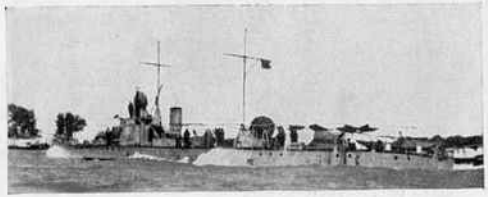
Future Construction.

1932–33. 2 ships of *Massaryk* type and some motor launches.

Mercantile Marine.

On the Danube	=	82,100 tons.
On the Elbe	=	20,000 tons.
At Sea	=	4,850 tons.
(Seaports	=	Hamburg and Stettin.)

Patrol Boats.



PRESIDENT MASSARYK (1930). Displacement: 200 tons. Complement: 50. Dimensions: 150 × 20 × ·5 feet. Guns: **4**—3 inch A.A., **10** M.G. Machinery: 2 sets turbines. D.H.P. 1,600 = 16·8 kts. Oil: 45 tons. 2 more of this type are to be built.

Armoured Motor Launches.

O.M.d. 1, O.M.d. 2. Displacement: 17 tons. Complement: 23. Length: 80·6 feet. Guns: 2—3 inch, 2 M.G. H.P. 240 = 20 kts.

Patrol Boats—*continued.*

O.M.h. 4, O.M.h. 5. Displacement: 14 tons. Complement: 10. Armed with 1 or 2 machine guns.

Guard Boats.

8 **O.M.s. 11, 12, 13, 14, 15, 18, 19, 20.** Displacement: 7 tons. Complement: 11. H.P. 45 = 16 kts. Guns: **2** M.G.

Motor Tugs.

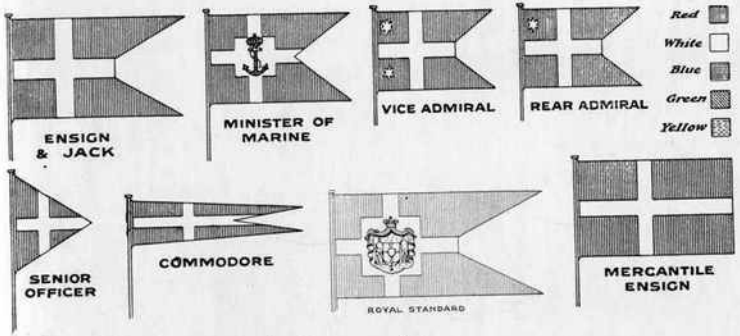
10 **O.M.v. 21** to **30.** Displacement: 10/14 tons. Complement: 9. H.P. 130. Guns: **1** M.G.

Naval Air Service includes 6 Seaplanes (Smolik type) stationed in the Bocche di Cattaro and at Divulja, the Yugo-Slavian flying station.

DENMARK.

(Officially revised by Ministry of Marine, 1933.)

Flags.



Note.—Division flag pennant, otherwise as commodore.

Naval Guns. (Officially revised, 1933.)

Bore: ins.	Bore: cm.	Length in Calibres.	Make and Date of Model.	Weight of Gun. metric tons.	Weight of Projectile. lbs.	Muzzle Velocity. ft.-secs.	Mounted in:
9·4	*24*	43	Bofors M. '06	24·5	352	2690	*P. Skram*
9·4	*24*	43	Bofors M. '01	24·3	353	2690	*O. Fischer*
5·9	*15*	45	Bofors M. '20	6·1	101	2740	*Niels Iuel*
5·9	*15*	50	Bofors M. '06	7·5	112	2723	*P. Skram*
5·9	*15*	43	Bofors M '01	5·5	112	2329	*O. Fischer*

Torpedoes:—45 c/m. heater type in all vessels.

Insignia of Rank on Sleeves.

Marine-minister.	Admiral.	Vice-Admiral.	Kontre-Admiral.	Kommandör.	Kommandör. kaptajn.	Orlogs-kaptajn.	Kaptajn-löjtnant.	Sölöjtnant. 1' Grad.	Sölöjtnant 2' Grad.	Kadet Ældste Klasse
British or U.S.A. } *Minister of Marine (if a Naval Officer).*	*Admiral.*	*Vice-Admiral.*	*Rear-Admiral.*	*Commodore.*	*Captain.*	*Captain (Jr) or Commander.*	*Lieutenant-Commander.*	*Lieutenant.*	*Sub-Lieutenant.*	*Midshipman.*

Personnel: About 4000, all ranks.
Oversea Possessions: Greenland, Faröe Islands.
Minister of Defence: Th. Stauring.
C. in C. and Director-General, Ministry of Marine: Vice-Admiral H. Rechnitzer.

Mercantile Marine.

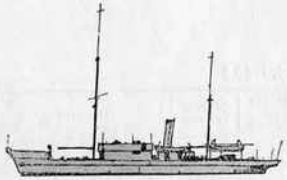
From "Lloyd's Register" 1933.

705 Vessels of 1,160,233 gross tonnage.

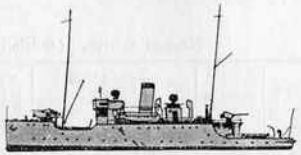
Note to pages following this

All displacements given in metric tons. Where measurement of length is not stated, it can be taken as between perpendiculars (*p.p.*). All draughts *max. load aft*, unless otherwise stated.

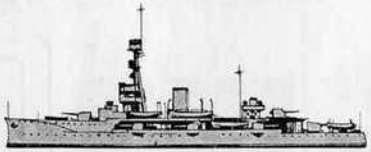
Displacements are "Standard".



MARSTRAND. WILLEMOËS.

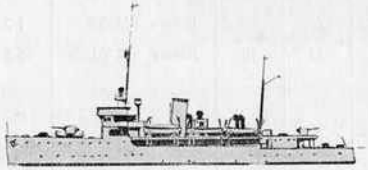


HENRIK GERNER.



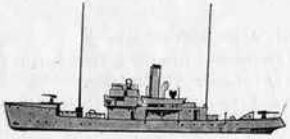
NIELS IUEL.

ISLANDS FALK.



HVIDBJORNEN.

PEDER SKRAM *Class.*



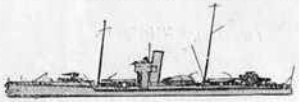
DIANA.

LOSSEN.

"T" *Class* T.b.

"O" *Class* T.b.

BESKYTTEREN.



"N" *Class* T.b.

"P" *Class* T.b.

"R" & "S" *Classes* T.b.

COAST DEFENCE SHIPS. (Officially classed as *Artilleriskibe*.)

NIELS IUEL (July, 1918).

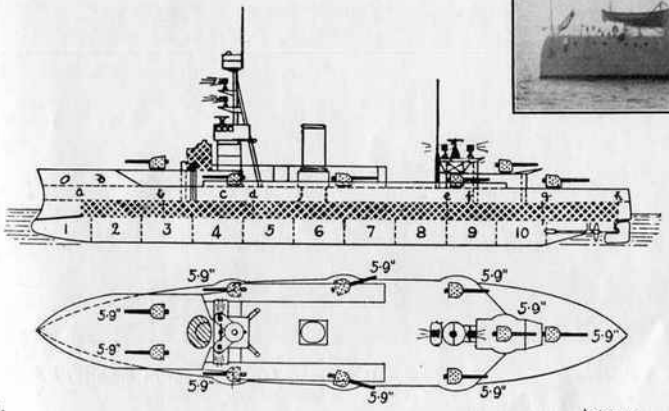
Built at Royal Dockyard, Copenhagen.
Displacement, 3,400 tons. Complement, 329.

Length { (*p.p.*), 285½ feet. (*w.l.*), —— feet. (*o.a.*), 295¾ feet. } Beam, 53½ feet. Draught { *mean* 15¾ feet. *full load*, aft., 16½ feet.

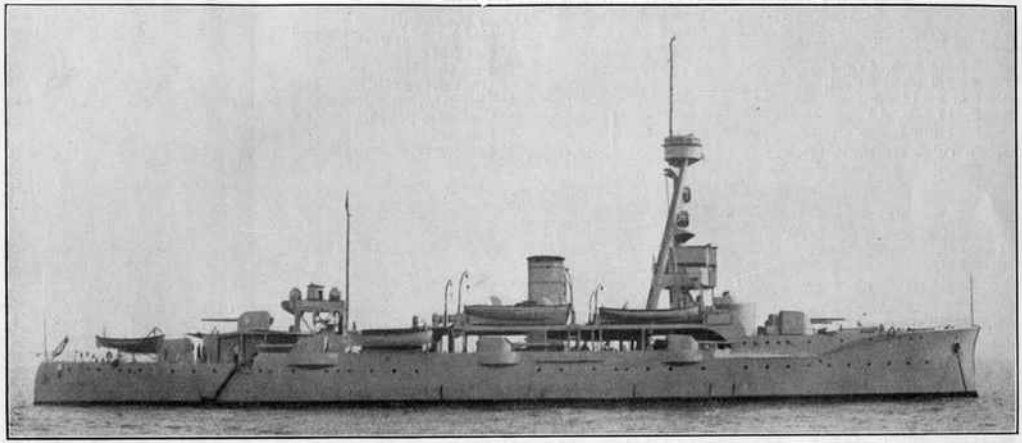
Guns (Bofors):
10—5·9 inch, 45 cal.
4—6 pdr. (anti-aircraft).*
Torpedo tubes (17·7 inch heater):
2 *submerged* (broadside).
*2 Mounted abaft funnel.
2 Mounted below bridge, abaft C.T.

Armour (Krupp):
7¾″, 7½″, 7″ Side (amidships b - g)
6″ Side (forward & aft. a - b and g - h)
6½″ Bulkheads (forward and aft.)
3″ Uptake to funnel ..
6¾″ Conning Tower .....
4″ Tubes to C.T. .....
1¾″ Gun shields (½″ at sides) .....
2¼″ Deck.....
2½″ Deck (forward) .....

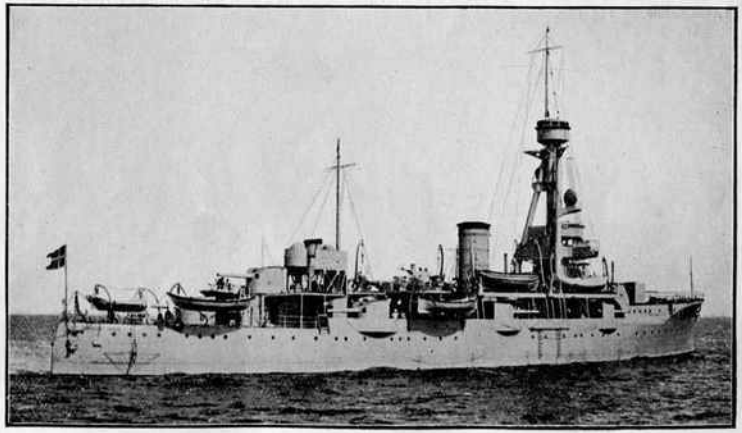
Machinery: Triple expansion. 2 screws. Boilers: 4 Yarrow (2 coal and 2 oil fired). Designed H.P. 5500=16 kts. Fuel: 250 tons coal + 240 tons oil. Endurance: about 5000 miles at 10 kts. Laid down Feb., 1914; first commissioned 23rd May, 1923.



Ahead: **4**—5·9 in.
Broadside: **6**—5·9 in., **1**—18 in. T.T.
Astern: **4**—5·9 in.



1926 *Photo, Lieut.-Com. Steen Steensen, R.D.N.*



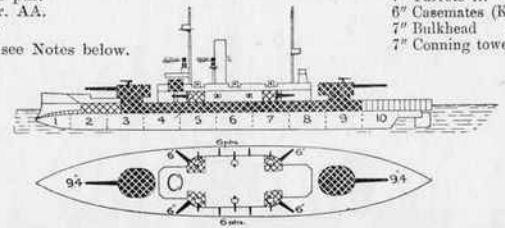
1925 *Photo, Lieut.-Com. Steen Steensen R.D.N.*

PEDER SKRAM (1908), **OLFERT FISCHER** (1903).
(Both built at Royal Dockyard Copenhagen.)

Displacement,—3,500-3,400 tons. Complement, 275.
Length (*p.p.*) 275 feet. Beam, 51 feet. Draught, 16½ feet.

Guns:—
2—9·4 inch, 43 cal.
4—5·9 inch, 50 cal.
6 or **8**—14 pdr.
2—14 pdr. AA.
2—1 pdr.
Torpedo Tubes see Notes below.

Armour (*see Notes*):
7″ Side (amidships) ...
4″ Side (aft) ... ...
3″ Deck (forward) ...
[Deck flat on belt.]
7″ Turrets ... ...
6″ Casemates (KNC)...
7″ Bulkhead ... ...
7″ Conning tower ...



Ahead:
1—9·4 in.
2—5·9 in.

Astern:
1—9·4 in.
2—5·9 in.

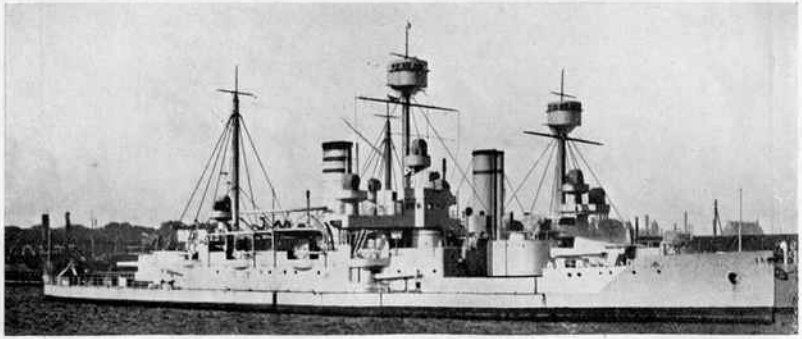
Machinery: 2 sets, triple expansion, 2 screws. Both are fitted with 6 Thornycroft boilers. Coal (*maximum*): 265 tons.

Gunnery Notes.—Bofors 1906 models in *P. Skram*; Bofors 1903 models in *O. Fischer.*

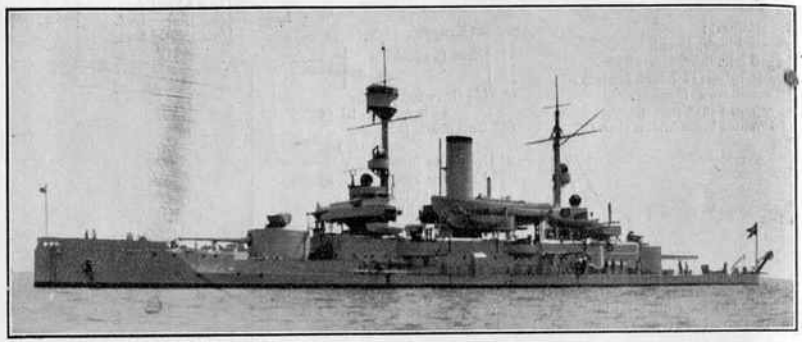
Armour Notes.—Krupp armour in *P. Skram*, Creusot in *O. Fischer.* Belt is 7 feet deep, 3½ feet above and 3½ feet below water-line. It stops 20 feet from bow. Armoured deck is 3 feet above water-line.

Torpedo Notes.—All tubes 18 inch and submerged: 1 bow, 1 stern, 2 broadside in *P. Skram*, 1 bow and 2 broadside in *O. Fischer.*

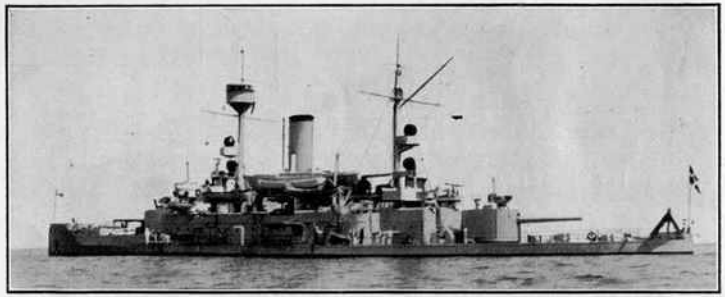
Engineering Notes.—Trial: 4,600 to 5,400=16 kts. Endurance is about 2,000 miles at 10 kts. and 1,050 miles at 14¾ kts.



PEDER SKRAM. H. TROLLE (de-rated 1932). *Photo added* 1930.

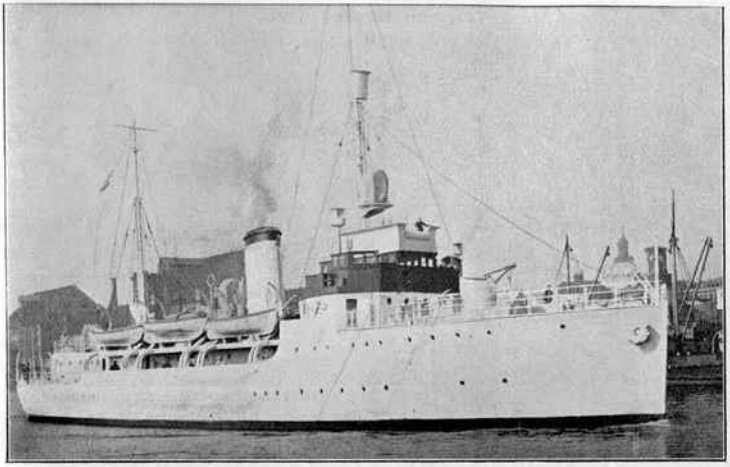


OLFERT FISCHER. 1928 *Photo, Lieut. Com. Steen Steensen, R.D.N.*



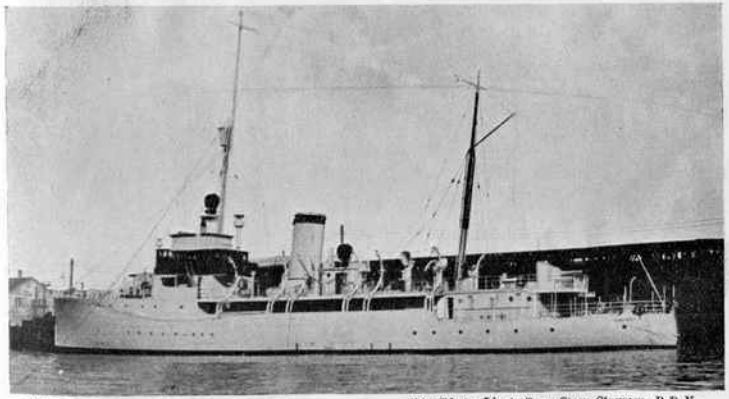
OLFERT FISCHER. 1928 *Photo, Lieut.-Com. Steen Steensen, R.D.N.*

Funnel Band:—*Olfert Fischer* none.
Peder Skram 2 red.



Officially rated as a Fishery Inspection Vessel. 1929 *Photo.*

HVIDBJÖRNEN Royal Dockyard (Copenhagen 1929). Displacement 915 tons. Complement 61. Dimensions: 196¾ (*p.p.*) × 32 × 13 feet (*mean* draught). Guns: **2**—3·4 inch. I.H.P. 1,800=**14·5** kts. 2 boilers (1 Babcock, 1 Thornycroft). **Oil**: 140 tons. Radius: 3,300 miles at 12 kts. On service in Greenland waters.



HVIDBJÖRNEN. 1931 *Photo, Lieut.-Com. Steen Steensen, R.D.N.*

Building.

INGOLF (Royal Dockyard, Copenhagen).
Displacement: 1,180 tons.
Dimensions: 213¼ (*p.p.*), 224 (*o.a.*) × 35½ × 16 feet (max.).
H.P.: 2,500=15·5 kts.
Guns: **2**—4·7″/120 mm. **2**—6 pdrs./57 mm. **2**—20 mm. AA.
Complement: 66.

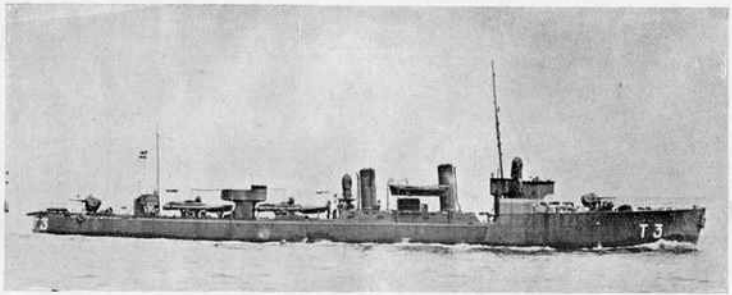
20 + 3 Torpedo Boats. (*Torpedobaade*)

Note.—In 1930 all Danish Torpedo Boats were numbered as follows:—

No.	Name	No.	Name	No.	Name	No.	Name.
R 5	*Sælen*	*S 5*	*Havhesten*	*P 1*	*Hvalrossen*	*N 2*	*Vindhunden*
R 4	*Havkatten*	*S 4*	*Søhunden*	*O 3*	*Søulven*	*N 1*	*Tumleren*
R 3	*Nordkaperen*	*S 3*	*Sölöven*	*O 2*	*Flyvefisken*	*T 3*	*Laxen*
R 2	*Makrelen*	*S 2*	*Støren*	*O 1*	*Söridderen*	*T 2*	*Hvalen*
S 6	*Narhvalen*	*S 1*	*Springeren*	*N 3*	*Sparkuggeren*	*T 1*	*Dragen*

3 boats ***Glenten, Högen, Örnen*** (all building Royal Dockyard, Copenhagen). Displ. and Dims. approximate to those of "T" class. Guns: 2—20 pdrs. (8·7 c/m), 2—20 m/m AA. 6 Tubes 18 inch.

3 "T" Class.

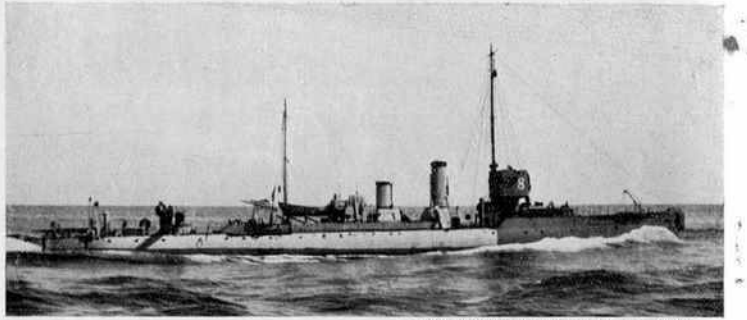


LAXEN. 1932 *Photo, Lieut.-Com. R. Steen Steensen.*

3 boats: ***Dragen*** (Dec., 1929), ***Hvalen, Laxen*** (both 1930), all by Royal Dockyard, Copenhagen. 285 tons. Dimensions:—198·7×19·5×7·6 feet. Armament: 2—14 pdr., 2—20 MM. AA., 8—18 inch tubes (2 in bow and 2 triples). H.P. 6000 = 27.5 kts. Oil: 40 tons. Complement: 48.

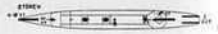
Torpedo Boats—*continued.*

4 "R" Class.

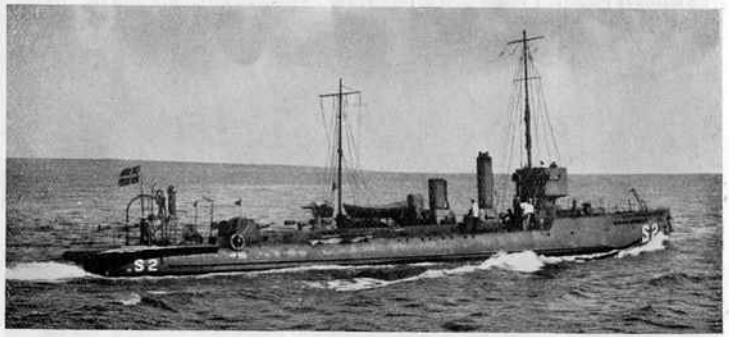


1922 *Photo, Lieut.-Com. R. S. Steensen, R.D.N.*

4 *Improved Ormen* class: ***Havkatten R4, Sælen R5,*** (both launched 1919), ***Makrelen R2, Nordkaperen R3,*** (both launched 1916). All by Royal Dockyard, Copenhagen H.P. 2000=24·3 kts. Coal 15 tons. Compl. 26. 110 tons. Dims.: 126·3 (o.a.)×13·9×8·7 feet *max.* draught. Armament: 2—6 pdr., 30 cal. (anti-aircraft), 2—18 inch tubes (one bow, one deck, both *above water*), and two depth charge tubes.



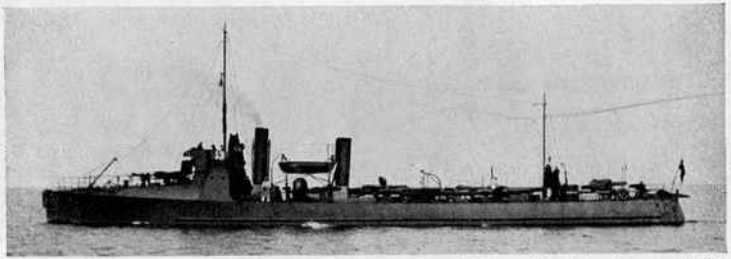
6 "S" Class.



SÖLÖVEN. 1930 *Photo, Lieut.-Com. R. S. Steensen, R.D.N.*

6 *Improved Ormen* class (similar to above): ***Springeren (S1), Støren (S2), Soloven (S3), Søhunden (S4), Havhesten (S5), Narhvalen (S6).*** (All by Royal Dockyard, Copenhagen, launched 1916–17). Guns: 2—6 pdr. AA., tubes 1—18" in bow. After tube removed by mine-sweeping gear. Details as "R" class above.

1 "P" Class.

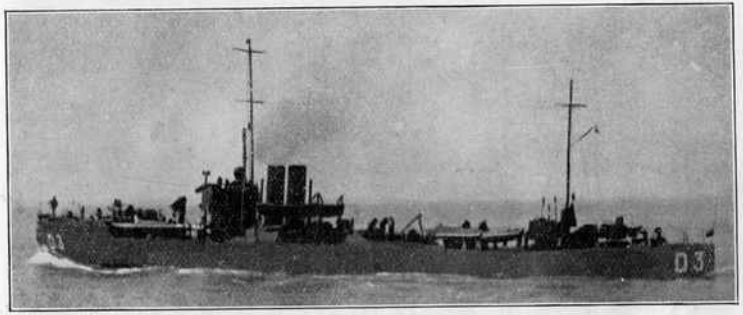


HVALROSSEN. 1922 *Photo, Lieut.-Com. S. Steensen, R.D.N.*

1 *Hvalrossen* type: ***Hvalrossen, P 1*** (1913), built at Royal Copenhagen Dockyard. 169 tons. Dims.: 148½×17×7 feet. Armament: 1—14 pdr. (aft)., 1—8 mm. AA. 4—18 inch tubes. H.P. 3500 = 26 kts. Coal 29 tons. Compl. 33.

Note.—In sketch annexed, twin tube should be shown as *astern* of single ones.

3 "O" Class.

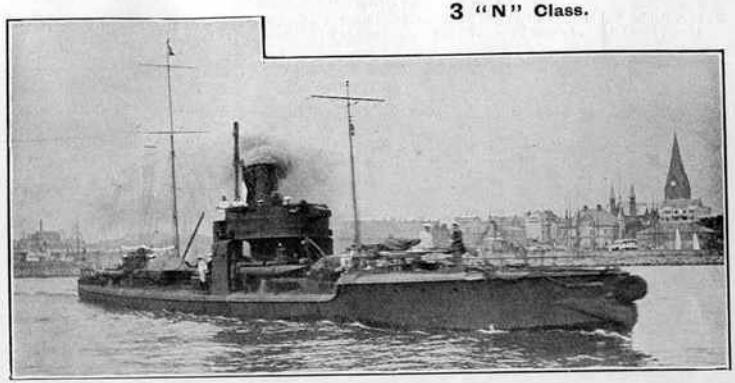


SÖULVEN. 1927 *Photo, Lieut.-Com. Steen Steensen, R.D.N.*

3 *Yarrow* type: ***Söridderen, O 1, Söulven, O 3, Flyvefisken, O 2*** (all 1911). First built by Yarrow, others by Burmeister & Wain, Copenhagen. 230 tons. Dims: 181½×18×6½ feet. Armament: 2—14 pdr., 1—8 mm. AA. 5—18 inch tubes. There are 10 w.t. compartments. S.H.P. 5000 = 27·5 Kts. Curtis turbines in *Söridderen*. Yarrow boilers in all. Coal: 43 tons. Compl. 39.

SÖRIDDEREN and TUMLEREN classes.

3 "N" Class.

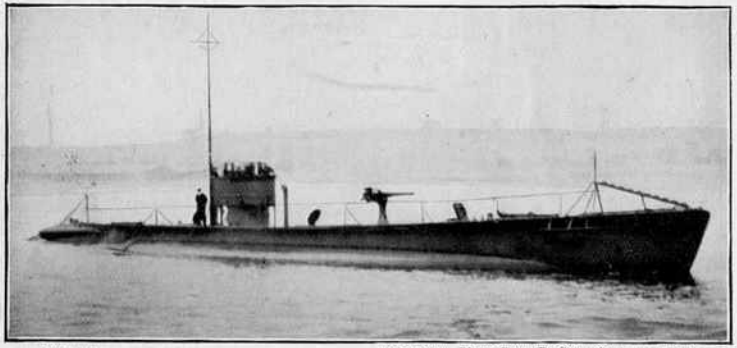


VINDHUNDEN. 1917 *Photo, Ebbesen, Aarhus.*

3 *Schichau* type: ***Tumleren, N 1, Vindhunden, N 2, Spækhuggeren, N 3*** (all 1911). First by Schichau, others by Royal Dockyard, Copenhagen. 250 tons. Dims.: 184·9 (o.a.)×19·1×7·3 feet. Armament: 2—14pdr., 1—8 mm. AA. 5 -18inch tubes. Turbine engines and Normand boilers in all. S.H.P. 5000 = 27 kts. Coal 50 tons. Compl. 39.

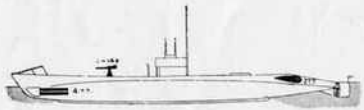
8 Submarines (*Undervandsbaade*).

Note.—Danish Submarines numbered thus for identification purposes: —, *Ran* 9 —, *Triton* 10 —, *Galathea* 12—, *Rota* C1—, *Bellona* C2 —, *Flora* C3 —, *Daphne* D1—, *Dryaden* D2.



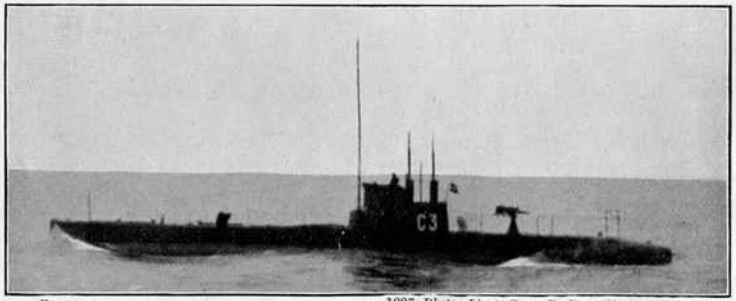
DRYADEN. 1928 *Photo, Lieut.-Com. R. Steen Steensen, R.D.N.*

2 *Navy* type: ***Daphne*** (Dec., 1925), ***Dryaden*** (June 3, 1926). Built at Royal Dockyard, Copenhagen. Burmeister & Wain Diesels. 900 H.P. = 13·5 kts. *on surface.* Motors of 400 H.P. = 6·5 kts. *submerged.* Dimensions: *About* 160 × 16 × 8·5 feet. Displ.: 300/381 tons. Armament: 1—14 pdr gun: 1—20 mm. AA. 4 bow and 2 stern 18 inches tubes. *Daphne* completed 1926, *Dryaden* 1927. Complement, 24.



DAPHNE.

ROTA.

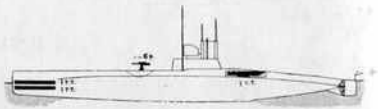


FLORA. 1927 *Photo, Lieut.-Com. R. Steen Steensen R.D.N.*

3 *Navy* type: ***Bellona*** (1919), ***Flora*** (1920), and ***Rota*** (1918). All built at Royal Dockyard, Copenhagen. Burmeister & Wain. Diesel engines. H.P. 900/640 = 14/8 kts. Dim: 155·7 × 14·4 × 9·5 feet. 290/369 tons. Armament: 1—6 pdr. AA.; 4—18 inch torpedo tubes: 3 bow, 1 stern. *Rota* has one deck tube in addition before C.T Complement, 24.

1923 *Photo, Lieut.-Com. Steen Steensen, R.D.N.*

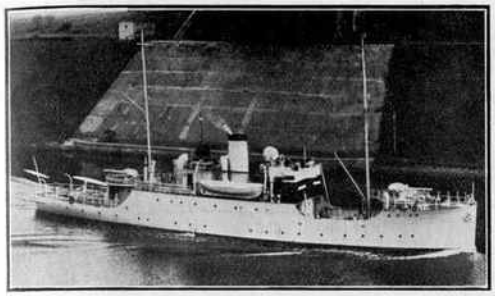
3 *Holland* type: ***Galathea*** (1916), ***Ran*** (1915), ***Triton*** (1915), all built at Royal Dockyard, Copenhagen. Burmeister & Wain. Diesel engines. H.P. 450 = 13 kts. Motors:—340 H.P. = 6·5 kts. submerged. Dimensions: 133½ × 12 × ½ feet. Displacement 177/235 tons. Armament: 3—18 inch torpedo tubes, 2 bow, 1 stern. Complement, 14.



AEGIR CLASS.

PATROL BOAT AND MINING VESSELS.

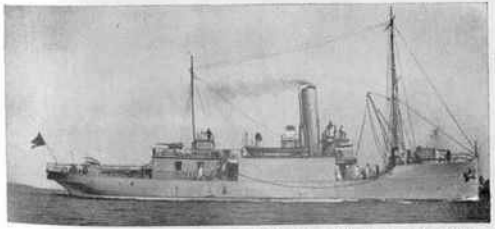
Submarine Depôt and Repair Ship.



HENRIK GERNER. 1928 *Photo.*

HENRIK GERNER (Royal Dockyard, Copenhagen, 1927). Displacement, 448 tons. 160 × 27 × 8 feet. Guns: **2**—14 pdr. 2 Burmeister & Wain 6-cylinder, 4-cycle Diesel engines of 900 combined B.H.P. = 13·2 kts. Oil: 45 tons. Complement, 46. Fitted for minelaying.

Mine Ship (*Mineskib*).



Photo, Ministry of Defence (added 1921).

LOSSEN (1910). 640 tons. Complement, 61. 149·3 (p.p.) × 28 × 10 feet. Guns: **2**—14 pdrs. I.H.P. 900 = 12 kts. Coal: 20 tons. 175 mines carried.

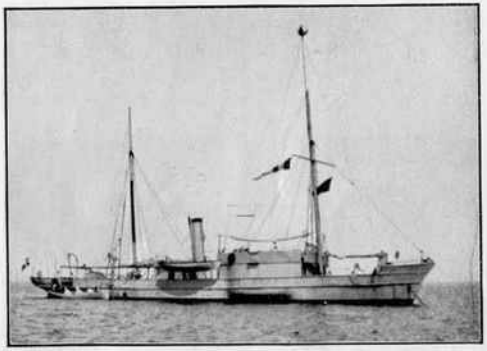
Mining Craft (*Minekraner.*)

1920 *Photo, Lieut.-Com. Steen Steensen, R.D.N.*

MINEKRAN V * (1917), **MINEKRAN VI** † (1919), (Royal Dockyard, Copenhagen) **186** tons. Dimensions: 88·5 (*p.p.*) × 20·7 × 6·6 feet (*mean* draught). Guns: **2**—1 pdr. Machinery: in each, 2 sets of Bergsund surface-ignition, heavy-oil motors and electric drive. B.H.P. 300 = 8 kts. Complement, 27. Carry 60 mines.

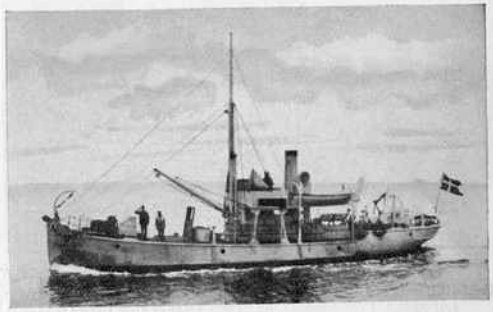
In Danish * *V = Fem*; † *VI = Seks*

Surveying Ships (*Opmaalingsskibe*).



WILLEMOËS. 1925 *Photo, Lieut.-Com. R. Steen Steensen, R.D.N.*

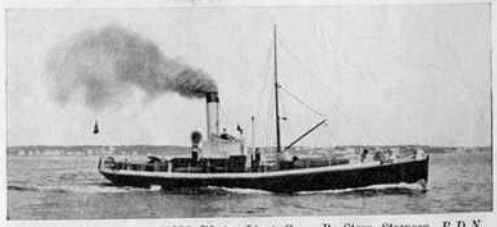
MARSTRAND, 170 tons, **WILLEMOËS,** 158 tons. (Both built 1861, re-built 1896). 114 (p.p.) × 17 × 6·4 feet (*mean* draught). Both launched 1861. Complements, 28. I.H.P. 250 = 11 kts. Guns: **2** machine. *Marstrand* was completely refitted, 1922-23.



1930 *Photo, Lieut.-Com. R. Steen Steensen, R.D.N.*

DAMPBAAD A (ex *Minekran I*) (1896). 96 tons. Dimensions: 72·2 × 16·4 × 6·6 feet. Guns: **2** machine. Speed: 7 kts. Complement, 18.

Torpedo Transport (*Torpedo Transportbaad*).

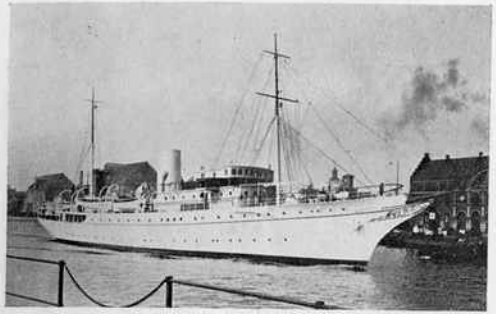


1920 *Photo, Lieut.-Com. R. Steen Steensen, R.D.N.*

SLEIPNER (1882) 80 tons. 73 × 14·8 × 5·9 feet (*mean* draught). Guns: none. I.H.P. 110 = 9 kts.

MISCELLANEOUS VESSELS.

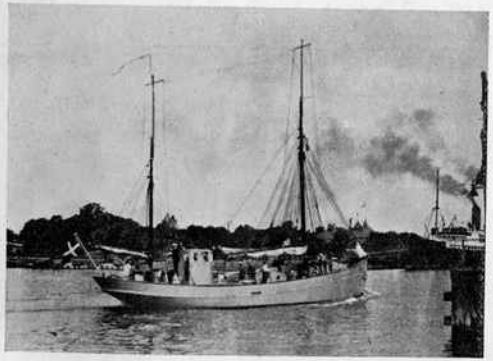
Royal Yacht (*Kongeskib*).



1932 *Photo, Lt.-Commdr. R. S. Steensen, R.D.N.*

DANNEBROG (Royal Dockyard, Copenhagen, 1931). 1,130 tons. Complement, 52. Dim.: 245·7 (*o.a.*) × 34 × 11·8 ft. Guns: **2** M.G. Two Burmeister & Wain 8 Cylinder. 2 cycle, Diesel. B.H.P. 1,800 = 14 kts.

Fishery Patrol Cutter (*Fiskeriinspektionsfartj*).



1932 *Photo, Lt.-Commdr. R. S. Steensen, R.D.N.*

MAAGEN (Frederikssund, 1930). *Galeas* type, Displ.: 110 tons. 71·4 × 16·6 × 9·5 feet. Guns: **1**—37 mm.: **1** Tuxham motor, I.H.P., 100 = 8 kts. Complement, 11.

On service in Greenland waters.

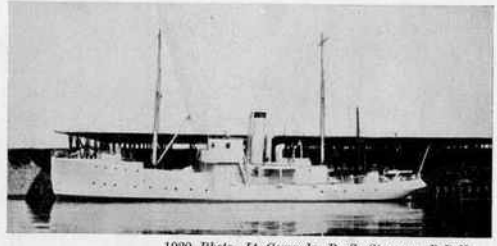
Fishery Patrol Vessels (*Fiskerriinspektionsskibe*).

For Sloops *Fylla*, and *Hvidbjornen* used on this service, see an earlier page.

1921 *Photo, Lt.-Commdr. R. S. Steensen, R.D.N.*

ISLANDS FALK (Elsinore 1906). 730 tons. Complement, 64. 170·6 (*p.p.*), 183·6 (*o.a.*) × 29·3 × 16·9 feet. Guns: **2**—6 pdr., **2**—3 pdr. I.H.P. 1100 = 11·7 kts. (*f.d.*) Cruising speed is 9 kts. Reboilered 1921. Employed on North Sea Fisheries.

Now has short Topmasts.



1920 *Photo, Lt.-Commdr. R. S. Steensen, R.D.N.*

DIANA (Holland, 1916). 288 tons. 116·5 (*p.p.*), 124·8 (*o.a.*) × 21·5 × 10 feet. Guns: **2**—3 pdr. I.H.P. 400 = 11·5 kts. Complement, 26.

Bussey (1933) gives also:—

Iceland Government vessels:

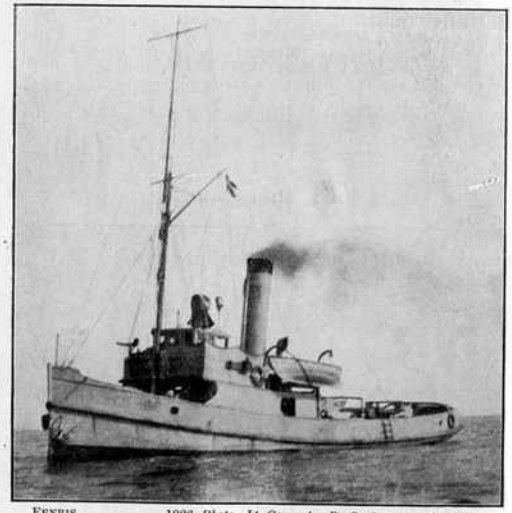
AEGIR, ODIN, THOR.

Fishery Patrol Vessels—*continued.*

1921 *Photo, Lt.-Commd. R. S. Steensen, R.D.N.*
(*Fishery Cruiser, Farõe Islands.*)

BESKYTTEREN (1900). 415 tons. Comp. 73. 134 (*p.p.*), 142·5 (*o.a.*) × 24·8 × 12·5 feet. Guns: **1**—6 pdr., **2**—3 pdr. I.H.P. 620 = 12·5 kts. (*f.d.*). Cruising speed is 9 kts. Re-boilered 1920. Serves as parent ship for Aircraft.

Tender.



FENRIS. 1926 *Photo, Lt.-Commdr. R. S. Steensen, R.D.N.*

FENRIS (Holland, 1915). 148 tons. 85·3 (*p.p.*) × 20·7 × 9·2 feet. Guns: **2**—3 pdr. I.H.P. 420 = 12 kts. Complement, 19. Employed as Tug and Squadron Tender.

EGYPT.

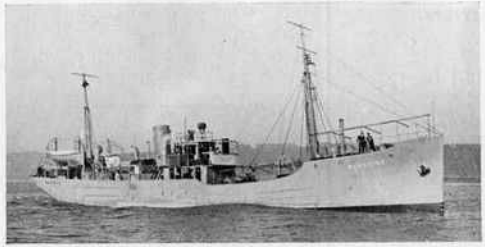
A:—Coastguard and Fisheries Administration.
Patrol Vessels.

1930 *Photo, Swan, Hunter.*

EL AMIRA FAWZIA (Swan, Hunter, July 8th, 1929). 2,640 tons. Dimensions: 275 × 38 × 23½ feet. Machinery: Triple expansion. H.P. 2,750=15 kts. 2 screws. 2 S.E. boilers (working pressure, 180 lbs.). Oil fuel. Fitted as transport for 400 men and 40 horses. Normally employed on coasting service carrying passengers.

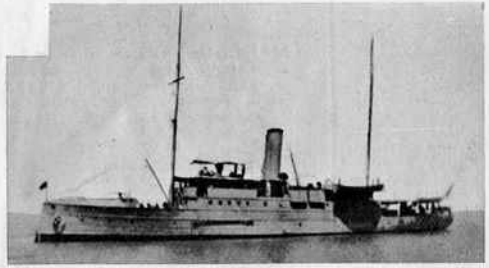
EL AMIR FAROUQ (Hawthorn Leslie, 1926). 947 tons *gross*. Dimensions: 247 × 34 × 12½ feet draught. Guns: Not known. Machinery: Triple expansion. 2 screws. I.H.P. 2,000=18 kts. Oil fuel.

RACHIB (*ex*-British "P" class Patrol Boat, 1917). Displacement, 613 tons. Dimensions: 230 (*p.p.*), 244½ (*o.a.*) × 23¾ × 7 feet *max.* draught. Guns: 1—12 pdr., 1 S.L. Parsons geared turbines. S.H.P. 3560 = 22 kts. Complement, 40.



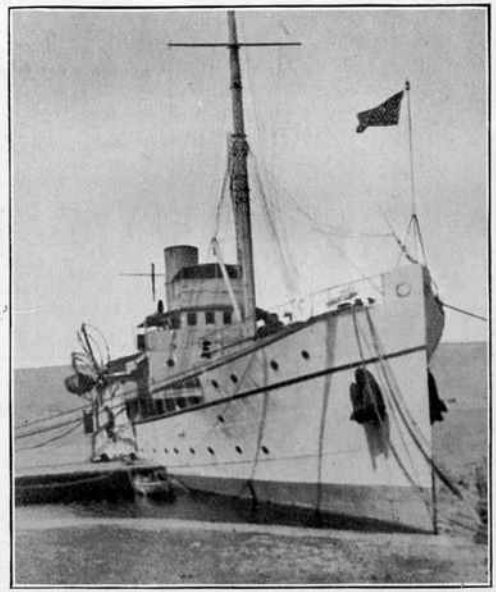
1930 *Photo, Swan, Hunter.*

MABAHISS—Built by Swan, Hunter, and completed 1930. Employed on research work. Dim.: 138 × 23½ × 13½. Displacement ? tons. Machinery: Triple expansion. 650 H.P. Speed: 11 kts.



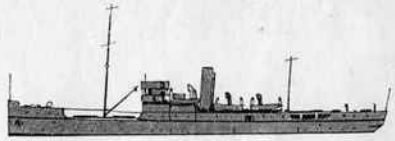
ABDUL MONEIM (Clydebank, 1902). 610 tons. Dimensions: 177 (*p.p.*) × 28 × 12½ feet *max.* draught. Guns: none. 1 S.L. Machinery: Triple expansion. I.H.P. 850 = 13.5 kts. Complement, 44.

B:—Ports and Lighthouses Administration
Transport (*ex*-Sloop).



SOLLUM. 1927 *Photo, Lieut-Com. R. H. Mandley, R.N.*

SOLLUM (*ex*-British Sloop *Syringa*, of *Anchusa* class, built by Workman, Clark & Co., 1917). Displacement, 1,290 tons. Dimensions: 255¼ (*p.p.*), 262¼ (*o.a.*) × 35 × 12 feet. No guns. Designed H.P. 2,500 = 16 kts. 1 screw. Coal: 260 tons. Many alterations have been effected at considerable cost to fit this vessel for accommodation of Government officials on visits of inspection, etc., to Mediterranean coast.



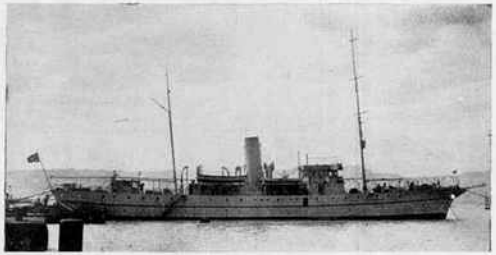
Inspection Vessels and Store Carriers.

NAFTIS (1905). 325 tons *net*. Dimensions: 187¾ (*p.p.*) × 30½ × 7¼ feet.

MONAGAM (1904). 87 tons *net*. Dimensions: 118 (*p.p.*) × 19¾ × 8⅜ feet.

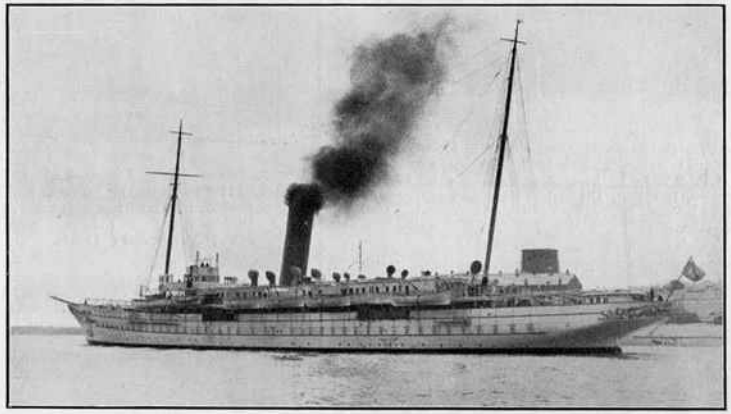
Note.—There are also a large number of Harbour Craft, Tugs, etc., for which space cannot be afforded.

Lighthouse Tender.



AIDA (A. & Ch. de la Loire, Nantes, 1911). 1428 tons *gross*. Dimensions: 246½ × 31¾ × 13½ feet draught. I.H.P. 1300 = 15 kts. 1 screw. Serves in Red Sea.

C:—Royal Yacht.



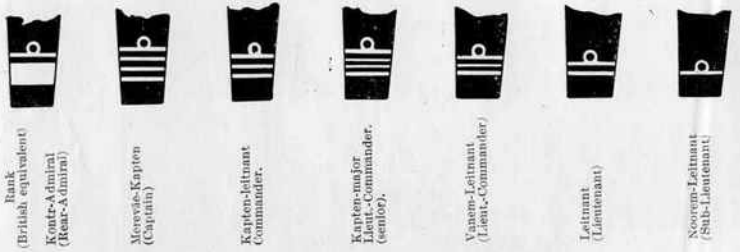
MAHROUSSA. 1927 *Photo, Cribb.*

MAHROUSSA. Iron. Built by Samuda Bros., Poplar, 1865. Reconstructed by A. & J. Inglis, Glasgow, 1905, and since re-fitted at Portsmouth Dockyard. Displacement: 4561 tons. Dimensions: 400 (*p.p.*), 420 (*w.l.*), 477⅜ (*o.a.*) × 42¾ × 17¼ feet draught. Machinery: 3 Parsons turbines. Boilers (new 1905): 5 main and 1 auxiliary Inglis multitubular. 3 screws. S.H.P. 5500 = 16 kts. Oil: 346 tons. Complement, 164.

ESTONIAN FLEET.

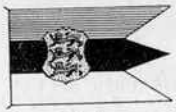
(Officially revised by courtesy of the Chief of the Naval Staff, Tallinn, by courtesy of Chief of Naval Staff, 1933.)

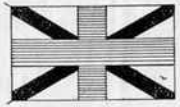
Naval Uniforms.

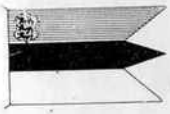


Chief of State.

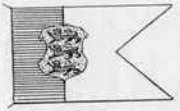
Pendant of Chief of State.

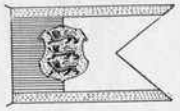

Ensign.

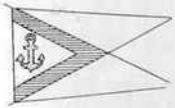

Jack,
Flag of Coastal Batteries.

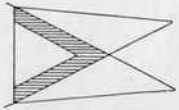

Auxiliary Craft. (Ensign.)

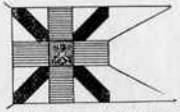
Minister of War.

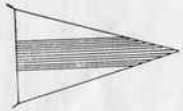

R. Admiral.

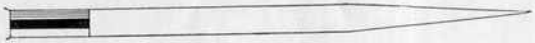

C. in C.

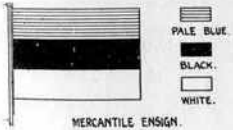

Chief of Naval Forces (If not Admiral).


Chief of Division.


Chief of Coastal Batteries


S.N.O.

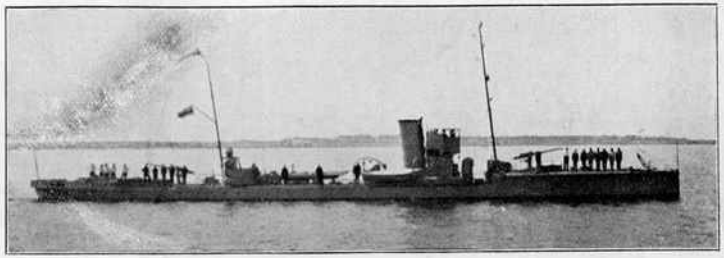

Masthead Pendant.



MERCANTILE ENSIGN.

Commander-in-Chief of Fleet and Coast Defence : Captain V. Grenz.
Chief of Naval Staff : Commander V. Martson
Naval Officers and Men : 1600
Colour of Ships : Grey.
Mercantile Marine ("Lloyd's Register" 1933): 110 vessels of 112,898 gross tonnage.

Torpedo Boat.

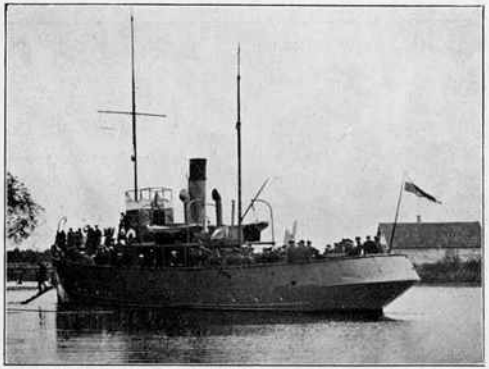


1929 *Official Photo.*

Sulev (ex-German *A32*). Built at Elbing, 1916. (Sunk off Estonian Coast, October, 1917, salved and refitted 1923.) Displacement, 228 tons. Dimensions : 165½ × 17½ × 6 feet. Guns : **2**—3 inch, 50 cal. Torpedo tubes : **2**—18 inch, in double deck mounting. Can carry 10 mines. Designed S.H.P. 3500 = 26 kts. Oil : 50 tons = 975 miles at 20 kts. Complement, 35. Main mast shortened 1932.

GUNBOATS.

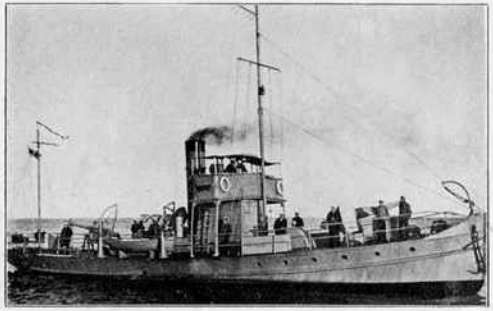
Gunboats. (*Suurtiiki Laevad*).



1929 *Official Photo.*

***AHTI.** Built 1908, refitted 1919. 144 tons. Dimensions: 90½ × 16½ × 6 feet. Guns: 2—47 m/m., 2 M.G. Designed H.P. 220 = 10 kts. Complement, 17.

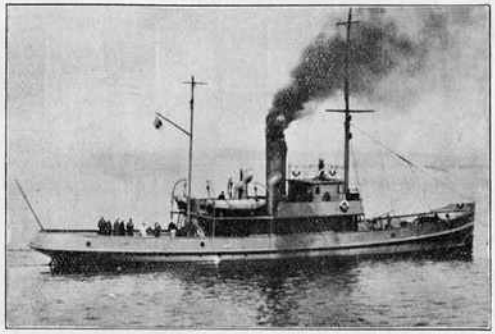
*Stationed in Peipus Lake.



1929 *Official Photo.*

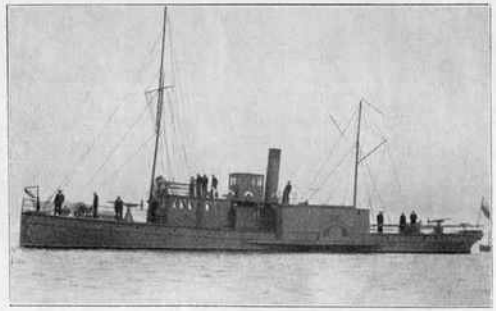
MARDUS. Refitted 1921. 80 tons. Dimensions: 90 × 21 × 7 feet. Guns: 2—3 inch, 50 cal., 2 M.G. Designed H.P. 225 = 11 kts. Complement, 25. In Reserve.

Gunboats—*continued.*



1929 *Official Photo.*

LAENE (1915). 400 tons. Dimensions: 129 × 20 × 11½ feet. Guns: 2—75 m/m. Designed H.P. 350 = 12 kts. Coal: 80 tons. Complement, 25.

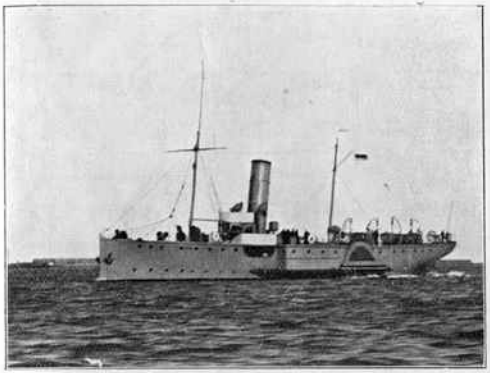


1929 *Official Photo.*

***TARTU.** Paddle vessel. Refitted 1919. 108 tons. Dimensions: 128½ × 17½ × 2¾ feet. Guns: 2—47 m/m., 2 M.G. Designed H.P. 120 = 11 kts. Complement, 20.

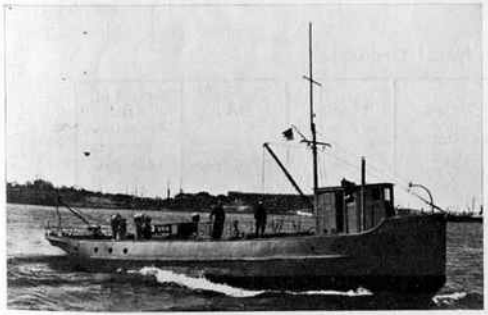
*Stationed in Peipus Lake.

Minelayers.



RISTNA. 1929 *Official Photo.*

RISTNA (1908), **SUUROP** (1907). Paddle Vessels. Refitted 1927. 500 tons. Dimensions: 198½ × 49½ (over paddle boxes) × 6½ feet. Guns: 1—3 inch, 50 cal., 1—1 pdr. Pom-Pom. Designed H.P. 750 = 12.5 kts. Complement, 40. Also fitted for use as Minesweepers.



OLEV. 1933 *Official Photo.*

KALEV (ex-Russian *M.8*), **OLEV** (ex-Russian *M.10*) (1914). 50 tons. Dimensions: 68½ × 15 × 4 feet. Guns: 1—57 m/m. Engines: 2 sets of petrol motors. Designed H.P. 80 = 9 kts. Complement, 10.

Minesweeper.

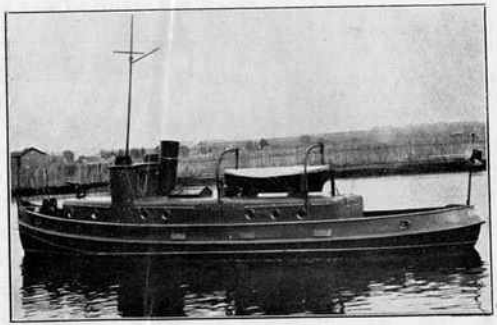
(See also *Ristna* and *Suurop*, in preceding column.)

1929 *Official Photo.*

TAHKONA (1919). 45 tons. Dimensions: 57½ × 10½ × 5½ feet. Designed H.P. 150 = 12 kts. Complement, 8.

Coastguard Vessels.

KÕU. Refitted 1928. 100 tons. Dimensions: 87 × 17½ × 8½ feet. Guns: 1—50 m/m., 2 M.G. Designed H.P. 350 = 12 kts. Complement, 18.



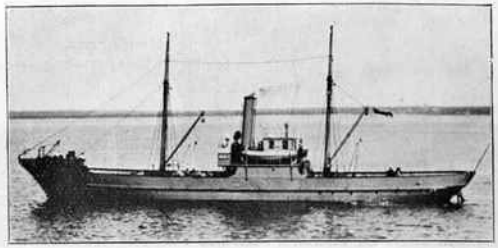
1929 *Official Photo.*

ERILANE. Built 1915, refitted 1919. 25 tons. Dimensions: 53 × 10 × 5 feet. 1 M.G. Designed H.P. 50 = 10 kts.

Icebreakers.

SUUR TÕLL (ex-*Vainamoinen*) (4800 tons), **TASUJA** (1100 tons), and **JÜRI VILMS** (200 tons), are in peace-time all under the control of the Government Shipping Department.

Naval Tugs and Tenders.



1929 *Official Photo.*

KOMPASS (1918). 300 tons. Dimensions: 143 × 21 × 12 feet. Designed H.P. 220 = 9 kts. Complement, 20. Fitted for cable laying.

JAAN POSKA. 250 tons. Dimensions: 101 × 21 × 9½ feet. H.P. 600 = 11 kts. Complement, 15. Commissioned in 1929 as a Tug-icebreaker.

SAKALA. 40 tons. Dimensions: 62 × 11 × 6½ feet. Designed H.P. 40 = 8 kts. Complement, 6.

M.P.10. 24 tons. Dimensions: 55½ × 9½ × 3½ feet. Designed H.P. 100 = 13.5 kts. Complement, 6.

1929 *Official Photo.*

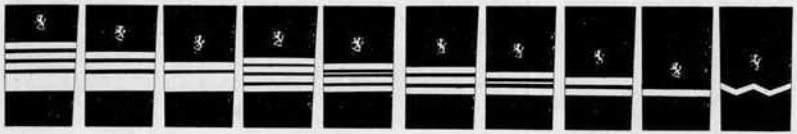
M.P.8., M.P.14., M.P.23. (1909). 12 tons. Dimensions: 53 × 13 × 6 feet. Designed H.P. 55 = 9 kts. Complement, 6.

FINLAND.

Revised 1933 by courtesy of The Ministry of Defence.

Uniforms.

(a) = Finnish Rank ; (b) = British Rank.



(a) Amiraali. (b) *Admiral.*
(a) Vara-Amiraali. (b) *Vice-Admiral.*
(a) Kontra-Amiraali. (b) *Rear-Admiral.*
(a) Kommodori (b) *Commodore.*
(a) Komentaja. (b) *Captain.*
(a) Komentaja-Kapteeni. (b) *Commander.*
(a) Kapteeni-Luutnantti. (b) *Lieut.-Comm.*
(a) Luutnantti. (b) *Lieutenant.*
(a) Aliluutnantti. (b) *Sub-Lieut.*
(a) Reservilali 'tti. (b) *Reserve Sub-Lt.*

The figure over top stripe is the Lion of the Finnish Arms, as enlarged sketch reproduced herewith. Colour of cloth between stripes :—

Engineers : purple ; *Paymasters :* silver stripes and 1 silver star ; *Surgeons:* red ; *Army officers in Naval Service :* green. *Reserve* officers have wavy stripes as R.N.V.R.

Minister of Defence : A. A. Oksala.

Naval Attaché (London) : Commander V. L. Kopio.

Personnel : Active List, about 1,600 officers and men.

Wireless.

Marconi Western Electric and Telefunken systems used.

Colour of Ships.

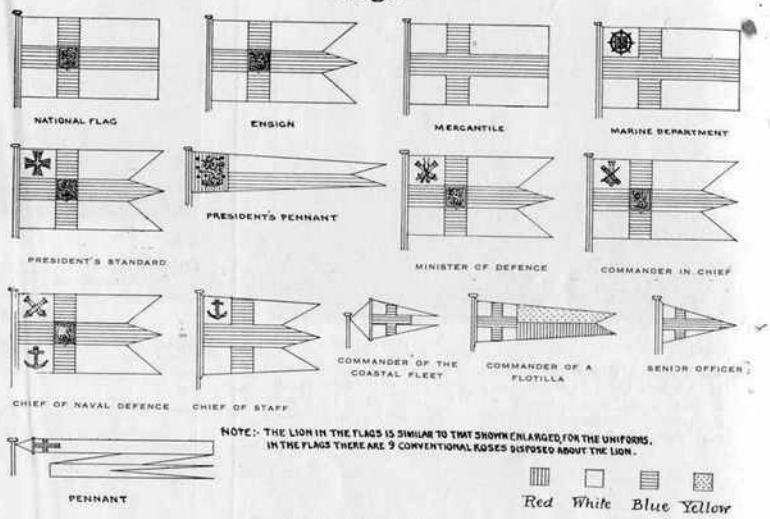
Grey.

Mercantile Marine.

(From "Lloyd's Register," 1933)

278 vessels of 351,250 *Gross* Tonnage.

Flags :—



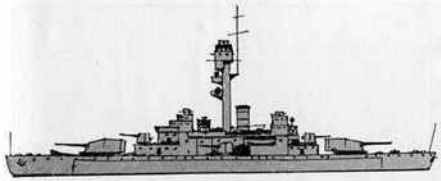
NOTE :- THE LION IN THE FLAGS IS SIMILAR TO THAT SHOWN ENLARGED FOR THE UNIFORMS. IN THE FLAGS THERE ARE 9 CONVENTIONAL ROSES DISPOSED ABOUT THE LION.

Red White Blue Yellow

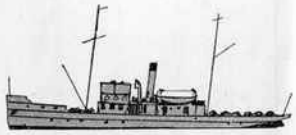
Naval Ordnance.

Calibre inches.	m/m.	Maker.	Length.	M.V.	Weight of A.P. projectile.
10	254	B	45	2788 fps.	495 lbs.
6	150	C	Howitzer	2601 ,,	91 ,,
4·7	120	A	41	2132 ,,	44 ,,
4·7	120	V	50	3001 ,,	44 ,,
4·7	120	C	45	2699 ,,	44 ,,
4·1	105	B	50	2952 ,,	35 ,,
4	102	C	60	2706 ,,	38·5 lbs.

A = Armstrong. B = Bofors. C = Canet. V = Vickers.



VÄINÄMÖINEN. ILMARINEN.

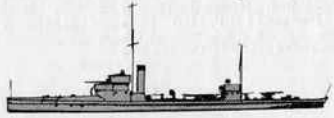


SVEABORG.

HÄMEENMAA.
UUSIMAA.

KARJALA.
TURUNMAA.

M 1



KLAS HORN.
MATTI KURKI.

RAUTU. T 2

VETEHINEN (3).

SAUKKO.

Coast Defence Ships.

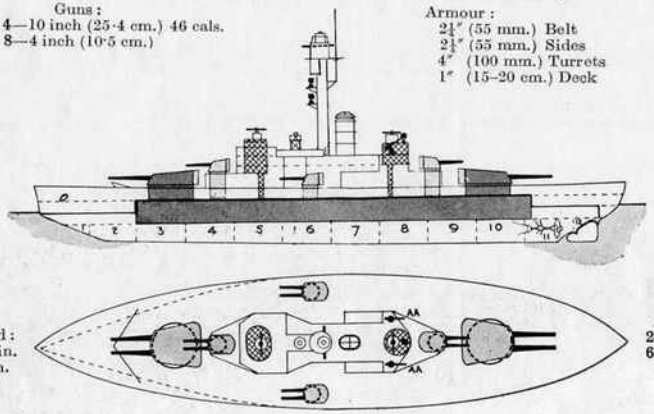
1932 *Official Photo.*

VÄINÄMÖINEN (Dec., 1930). **ILMARINEN** (July 9th, 1931).

Both at A. B. Crichton-Vulcan, Turku (Åbo).
Displacement, 4,000 tons. Complement, 300.
Dims: 305 × 53·7 × 14·7 feet. (93 × 16·4 × 4·5 meters.)

Guns:
4—10 inch (25·4 cm.) 46 cals.
8—4 inch (10·5 cm.)

Armour:
2¼″ (55 mm.) Belt
2¼″ (55 mm.) Sides
4″ (100 mm.) Turrets
1″ (15–20 cm.) Deck

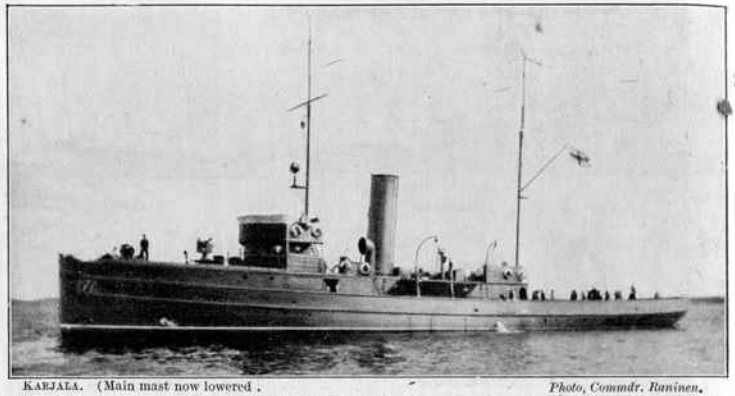


Ahead:
2—10 in.
6—4 in.

Astern:
2—10 in.
6—4 in.

Broadside: **4**—10 in., **6**—4 in.
Machinery: Diesel electric drive. Leonard system. D.H.P. =16 kts. 2 Screws. Fuel: tons.
Laid down Aug.–Sept., 1929. To be delivered in 1932 and 1933.
Guns:—Max. elevation of 10 inch is 50°. Secondary guns not mounted until end of 1933.

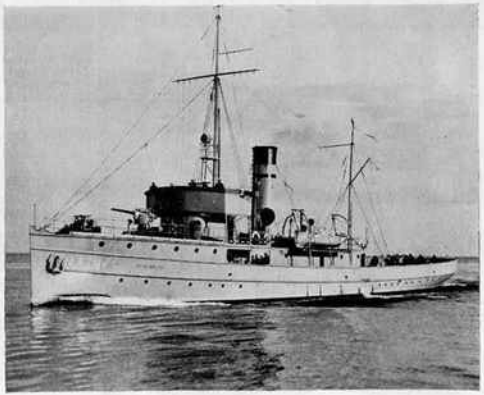
Patrol Vessels.



KARJALA. (Main mast now lowered.) *Photo, Commdr. Raninen.*

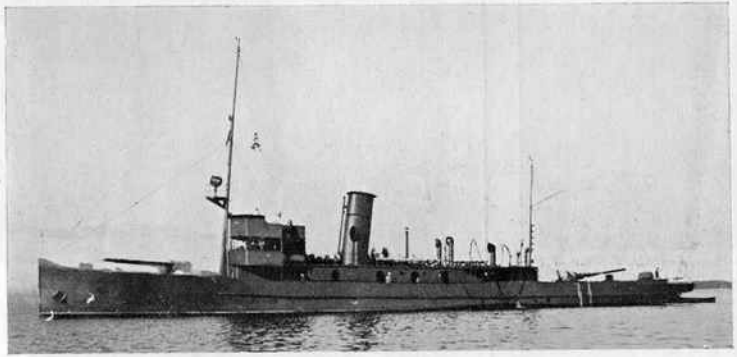
KARJALA (ex-Russian *Filin*), **TURUNMAA** (ex-Russian *Orlan*), built by Crichton A/B, Turku. Ordered by late Imperial Russian Government, 1914. Launched, 1918. Displacement: 342 tons. Complement, 48. Length (*p.p.*) 154 feet (*o.a.*) 164½ feet. Beam, 22½ feet. Designed load draught, 7½ feet. Guns: **2**—76 mm., **3** M.G. Machinery: 2 sets triple expansion. Boilers: Yarrow. Designed I.H.P. 1150=15 kts. Coal capacity *about* 50 tons.

Notes.—"Borowski type" Patrol Vessels and generally sisters to Polish *M. Pilsudski* and *Gen. Haller*. Both are employed as Cadets' Training Ship.



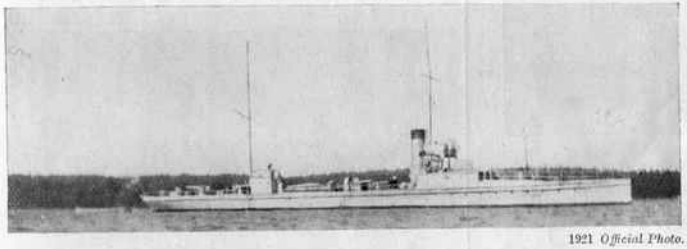
TURUNMAA. 1932 *Official Photo.*

Patrol Vessels.



UUSIMAA. 1932 *Photo, Commdr. Raninen.*

UUSIMAA (1918), **HÄMEENMAA** (1918). Displacement: 400 tons. Complement, 32. Dimensions: 160 (*p.p.*) × 24 × 10 feet. Guns: **2**—3·9 in., **1**—37 m/m. AA., **2** M.G. Machinery: 2 sets triple expansion. Designed H.P. 1000=15 kts. Coal: 50 tons.



1921 *Official Photo.*

MATTI KURKI (ex-Russian *Posadnik*), **KLAS HORN** (ex-Russian *Voevoda*), both built by Schichau, Elbing, 1892. Displacement: 420 tons. Complement, 62. Length (*p.p.*) 187¾ feet. Beam, 23 feet. Draught, 10½ feet. Guns: **2**—3·9 inch, **3** M.G. Machinery: 1 set triple expansion. Boilers: Locomotive type. Designed H.P. 3300=19 kts. Best present speed about 16 to 17 kts. Coal: about 80 tons.

Notes.—Built for late Imperial Russian Navy as Torpedo Craft but re-rated as Patrol Vessels. On the outbreak of the Russian Revolution they were abandoned by their crews at Finnish Ports and taken over for the Finnish Navy.

3 Submarines.

VETEHINEN. 1932 *Official Photo.*

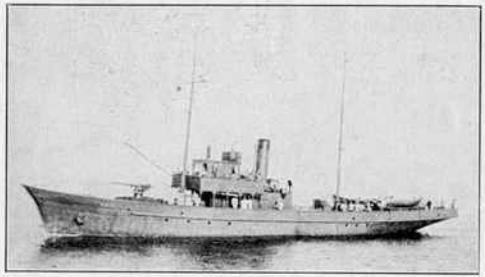
3 boats: ***Vetehinen*** (1930), ***Vesihiisi*** (1930), ***Iku-Turso*** (1931). Ordered 1926 from the Crichton-Vulcan Yard at Turku, Abo, the first keel being laid in Sept., 1926, other two early in 1927. Displacement: 493/716 tons. Dimensions: 164 (*o.a.*) × 19½ × feet. H.P. 1060/—. Speed, 14/8. Radius: 1,500/75 miles. Complement: 25. Torpedo Tubes: **4**—21 inch (533 m/m). Guns: **1**—76 m/m, 1—20 m/m. To be capable of diving to 40 fathoms. Diesels made by A. B. Atlas Diesel Co., Stockholm. Reported to carry 20 mines.

1 Submarine.

1932 *Official Photo.*

1 boat: ***Saukko*** (1930). Laid down 1929 by the Sandvikens Skeppsdocka Co. of Helsinki. Displacement: 99/125 tons. H.P. 200/120. Speed: 9/5¾ kts. Radius: 375/45 miles. Complement: 11. Torpedo Tubes: **2**—18 inch (450 m/m). Guns: **1**—13m/m. 9 mines.

Mine Sweepers and Minelayers.



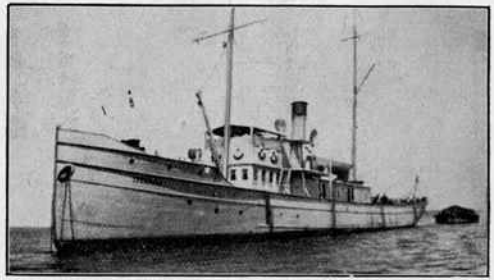
1924 *Photo, Commdr. Raninen.*

T.2 (1916) and **RAUTU** (ex Russian *Murman*, 1917). Displacement: 165 tons. Complement, 32. Dimensions: 143 (*p.p.*) × 20 × feet. Guns: 1—3·9". 2 M.G. Machinery: 2 sets triple expansion. Designed H.P. 550 = 14 kts. Oil 30 tons. Can carry 80 mines.

1921 *Official Photo.*

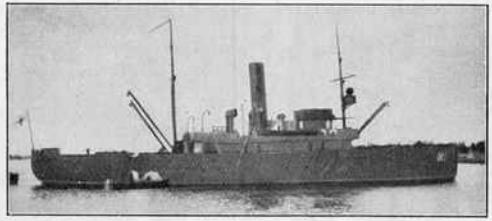
18 "A-boats": Numbered between *A.11—A.53*. Fitted as Mine Sweepers. Displacement: 9 tons. Complement, 8. Dimensions: 50 (*p.p.*) × 11½ × feet. Engines: Petrol motor. Designed H.P. 50 = 9 kts.

Minelayers.



1925 *Photo, Commdr. Raninen, F.N.*

SVEABORG (Maskin & Bro. A/B, Helsinki 1905). Displacement, 300 tons. Complement, 36. Dimensions: 143½ × 20 × 8¾ feet. Guns: Nil. Designed H.P. 300 = 10 kts. Coal: 30 tons. Carries 60 mines.



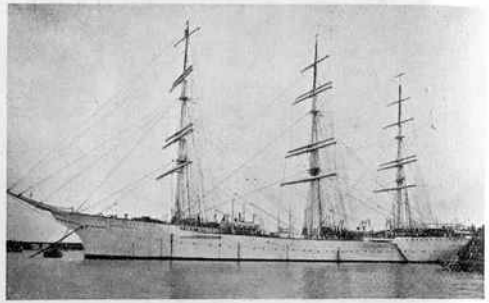
1924 *Photo, Commdr. Raninen.*

M.1 (ex *Voin*, Kolomna, 1916). Displacement, 640 tons. Complement, 41. Dimensions: 151 (*p.p.*) × 26½ × 7½ feet. Guns: 2—76 mm. Machinery: 1 set triple expansion. Designed H.P. 800 = 12 kts. Coal: 50 tons. Carries 150 mines.

Icebreakers.

The Government Icebreakers **JÄÄKARHU, SAMPO, TARMO, VOIMA** and **MURTAJA** would be available for naval use in wartime, but are no longer listed here, as they are under the control of the Board of Navigation.

Training Ship.

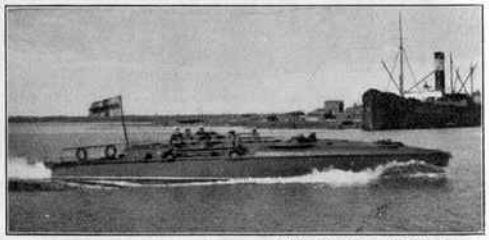


1932 *Official Photo.*

SUOMEN JOUTSEN (ex-*Oldenburg*) St. Nazaire, 1902. Displacement: 2,259: Dimensions:— 260·8 × 39·9 × 25·5 ft. Machinery: 2 Auxillary Motors = 400 H.P. = 6 kts. 70 tons fuel.
Complement, 27 + 60 cadets.
Purchased by Finnish Navy, 1931.

Motor Launches.

M.T.3—M.T.7 (1928). Usual Thornycroft 55 ft. type. Armament: 2—18 inch torpedoes, 2 Lewis guns, 2 D.C. Speed: 40 kts. **M.T. 6 & 7** built in Finland, one at Bergå, one at Abo.



1924 *Photo, Commdr. Raninen.*

M.T.V. 1 and **M.T.V. 2** (ex *M.A.S. 220* and *221*.) Built for Royal Italian Navy by Flli, Orlando in 1917, and purchased 1920. 12 tons. Dimensions: 5²½ × — × 3½ feet. Guns: 2 M.G. on high-angle mounts. Torpedoes: 2—17·7 inch carried in dropping gears on each beam. Machinery: 2 sets petrol motors. B.H.P. 500 = 26·5 kts.

FRANCE.

NOTE.—The following pages, descriptive of the French Navy, have been inspected and approved by the Ministry of Marine, Paris, 1933, though the Ministry of Marine accepts no responsibility for the accuracy of any of the statements made in "Fighting Ships" as regards the French Navy.

Minister of Marine—Monsieur

Naval Attaché (London)—Capitaine de Vaisseau H. P. Latham.

Asst. Naval Attaché—(Aéronautique)—Capitaine de Corvette Vincent Albertas

Navy Estimates.

1932. Frcs. 2,411,263,577 (9 months).

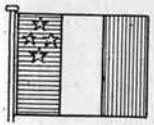
Personnel.

3,777 Officers, 53,750 Men.

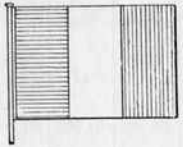
Flags.

Drawings prepared 1924 from information furnished by courtesy of the Ministry of Marine, Paris.

Presidential Flag: Initials of the President worked in Gold letters on central (white) stripe of the Ensign, the letters and their dimensions being chosen by M. le Président.

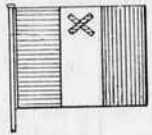


V.A. Comm. in Chief, Préfet Maritime de Regions.



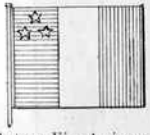
Ensign & Jack (Minister of Marine).

(*President's flag has initials in centre.*)

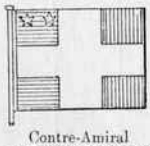


Maréchal de France.

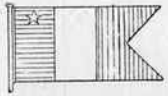
Vice-Amiral Chef d' Etat Major Général ou Inspecteur Général des Forces Maritimes.



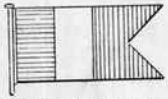
Autres Vice-Amiraux, et Généraux de Division en Mission Officielle, ou pourvus d'un Commandement en Chef.



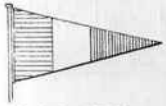
Contre-Amiral et Général de Brigade en Mission Officielle.



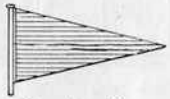
Capitaine de Vaisseau Chef de Division (independante ou en sous ordre).



Capitaine de Vaisseau Comm't un groupe de bâtiments, ou Major-Général commandant la Marine.



Capitaine de Frégate ou de Corvette, Comm't un groupe de bâtiments ou commandant la Marine.



Comm't supérieur temporaire de tout grade.

Hydravions

Rouge *Blanc* *Bleu*

Uniforms.

V.A. Chief of Staff.	V.A. in Command of Forces.	Vice-Amiral.	Contre-Amiral.	Capitaine de vaisseau.	Capitaine de frégate.	Capitaine de corvette.	Lieutenant de vaisseau.	Enseigne.	Enseigne 2e classe.	Aspirant.
Corresponding to British		*Vice-Ad.*	*Rear-Ad.*	*Captain.*	*Commander.*	*Lieut. Comm'der.*	*Lieut.*	*Lieut.* (junior.)	*Sub-Lieut.*	*Midshipman.*

Capitaine de Vaisseau, Chef de Division, has one star above the stripes.

Only three of the Capitaine de frégate's stripes are gold: the second and fourth are silver.

Aspirant golden stripe with two light blue patches.

Epaulettes with parade uniform are of the usual sort, *except* that—

A Vice-Admiral's epaulettes have the usual anchor and 3 stars.

A Rear-Admiral's " " " " 2 "

Caps are similar to British Navy in shape but badge differs, being more like Italian and there are stripes right round corresponding to rank. The cocked hat carries the tri-colour.

Torpedoes. (Details official).

Whitehead pattern, made at Toulon Torpedo Factory; also at St. Tropez, where Whitehead marks are built by the Société Française de Torpilles Whitehead.

Date.	French Designation.	Diameter.	Length.	Charge.	Pressure in chamber.	*Maximum* range.
		inches.	feet. ins.	lbs.	lbs. per sq. in.	
1919	55 c/m (D)	21·7	27′ ″	551	2420	15,000
1919	55 c/m (V)	21·7	21′ 7″	551	2200	4375
1912	45 c/m *long*	18	22′ 2″	317	2420	8000
1911	45 c/m *short*	18	17′ 3″	317	2140	1000
1909	45 c/m *cold*	18	16′ 8″	317	2140	2000

Notes.—All fitted with gyros. There are also other recent models of the *55 c/m* torpedo.

Mines.

9 marks in use up to 1914, but present types understood to include mainly 120 and 200 kilo. types for laying by S/M; 360-kilo. Sautter-Harlé spherical and 700-kilo. Breguet spherical types. Paravanes British marks.

General Notes.

Colour of Ships: *Big ships.*—Grey all over, but some have grey-green or greenish-brown turrets, or black barbette shields.

Destroyers, etc.—Light grey; Flotilla Leaders and Destroyers, also Submarines of *Requin* class, bear distinguishing numbers instead of letters as formerly.

Submarines.—Sea green or light grey.

Effective Life of Ships: Fixed in 1923 as—Battleships and Aircraft Carriers, 20 years; Cruisers, 17 years; Torpedo Craft, 15 years; Submarines, 12 years.—all reckoned from date of first commissioning for trials.

Washington Treaty standard has been adopted for regulation of displacements.

Mercantile Marine.

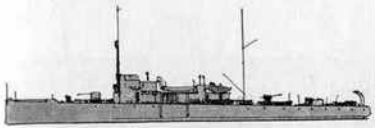
(From "Lloyd's Register." 1933 figures.)

1,511 vessels of 3,469,538 gross tonnage.

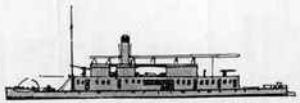
Naval Ordnance (converted from official 1919 Table furnished by courtesy of the Ministry of Marine and officially revised in 1927).

Calibre (ins.)	13.4		12		9.4	8	7.6			6.5			6.1	5.5			5.1		3.9	
Do. (c/m)	34		30.5		24	20.3	19			16			15.5	13·8			13		10	
Mark	1912		1906-10	1906	1902–6	1924	1902	1893–6	1893	'93-'96M	1893–6	1893	1920	1923	1910	1893	1924	1919	1917	
Length (calibres)	45		45	45	49.5	50	50	40	40	45	45	45	50	40	55	45	40	40	—	
Weight of Gun (English tons)	65.33		54.7	54.7	29.1	20.4	14.9	12.5	10.2	7.96	7.96	6.52	8.72	4.05	5.17	4.01	3.42	4.34	1.54	..
Weight of Shell (capped) in lbs.	A.P. 1190.5	Capped 1256.6	922.3	960.4	487.2	271.4	199	199	199	121	121	121	123.5	88.2	80.5	84	70.5	70.5	29.7	..
Weight of Charge (lbs.)	330.7	337.3	267.4	282.2	148.1	116.8	84	74.5	49.2	45.6	43.7	28.9	43.2	19.8	22.7	16	17	17	8.16	..
Max. Pressure (lbs.)	59,525	57,320	57,320	57,320	57,320	46,000	59,083	61,739	47,400	47,400	61,739	44,092	42,900	35,500	55,155	53,706	34,500	34,500	5291	..
Muzzle-Velocity (ft.-secs.)	2624.7	2605	2559	2559	2625	2936	3117	2756	2526	2953	2838	2527	2854	2297	2723	2395	2408	2408	2362	..
Remaining Velocity at 21,872 yds. / 20,000 m.	..	1309	..	..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..
Remaining Velocity at 16,404 yds. / 15,000 m.	1178	1462	..	..	1102		..	..	..	..	..	..	..	..	..	..	..	..	..	..
Remaining Velocity at 10,936 yds. / 10,000 m.	1473	1762	1529	1529	1348		1106	1010	992	928	918	922	..	..	860	905	..	..	879	..
Remaining Velocity at 5468 yds. / 5000 m.	1640	2162	1992	1992	1896		1860	1571	1447	1417	1351	1257	..	..	1230	1168	..	..	1115	..
Angle of descent at 20,000 m.	..	25° 10″	..	..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angle of descent at 15,000 m.	21° 10″	14° 50″	..	..	25° 50″		..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angle of descent at 10,000 m.	9° 30″	7° 35″	9° 25″	9° 25″	11° 10″		14° 10″	18° 10″	20° 50″	23° 20″	24° 30″	26° 30″	..	..	27° 30″	28° 40″	..	..	30° 20″	..
Angle of descent at 5000 m.	3° 10″	2° 53″	3° 14″	3° 14″	3° 20″		3° 10″	4° 10″	5°	4° 20″	5° 10″	6° 20″	..	..	6° 10″	7° 20″	..	..	8° 10″	..

A new 90 m/m. (3.5 inch) Anti-aircraft gun has been introduced. A 1929 model 5.1 inch has been mounted in latest destroyers.



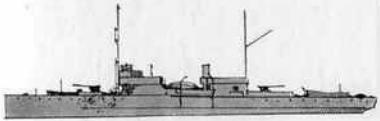
DILIGENTE
ENGAGEANTE (Dummy funnel)
SURVEILLANTE (Yacht stern)
(Minesweepers).



DOUDART DE LAGRÉE *(River Gunboat).*

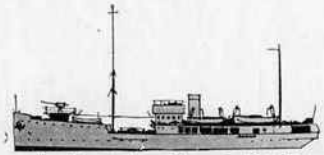
VILLE D'YS *(Despatch Vessel).*

YPRES *class (Despatch Vessels).*



CONQUERANTE.

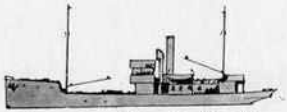
ARGUS, VIGILANTE *(River Gunboats).*



LA PÉROUSE *type (Surveying Vessels).*

ARRAS *class (Despatch Vessels).*

TROUPIER *(Patrol Boat).*

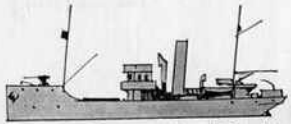


ALIDADE *type (Surveying Vessels).*

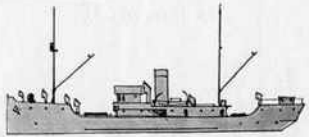
J. COEUR & CHAMPLAIN *(Transports).*

DUBOURDIEU *class (5) (Gunboats).*

GRANIT

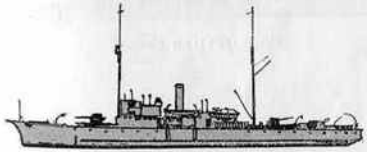


PASSEREAU, FAUVETTE *(Patrol Vessels).*



COËTLOGON *class (Transports).*

VITRY-LE-FRANÇOIS.



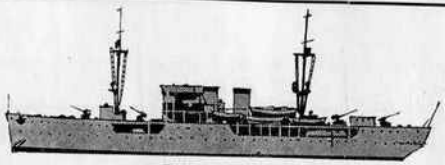
LURONNE

MEUSE OISE SOMME YSER
(Despatch Vessels).

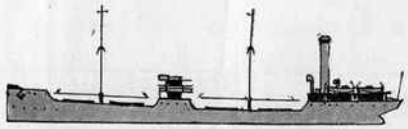
SUIPPE
ANCRE
SCARPE (with Yacht bow)
(Despatch Vessels).

ESCAUT, AILETTE *(Despatch Vessels).*

RECOGNITION SILHOUETTES.

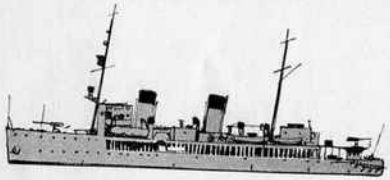


JULES VERNE.



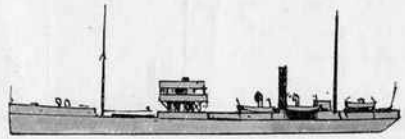
RHONE (*Oiler*).

QUENTIN ROOSEVELT



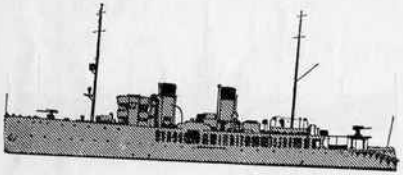
POLLUX.

GARONNE (*Oiler*).



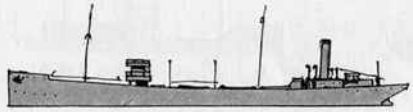
AUBE *class* (*Oilers*).

CH 1—4.



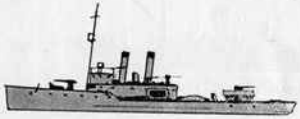
CASTOR.

LE LOING (*Oiler*).



DORDOGNE (*Oiler*).

AISNE. MARNE. (*Despatch Vessels.*)



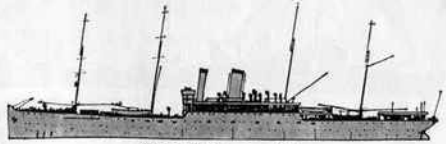
C 102-C 116 *class* (*Submarine Chasers*).

REGULUS *type* (*Sloops*).

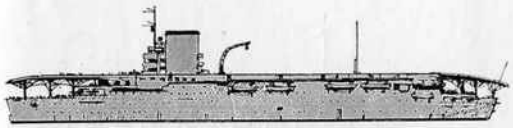
BOUGAINVILLE *class*.

ARDENT *type* (*Despatch Vessels*).

E. GARNIER

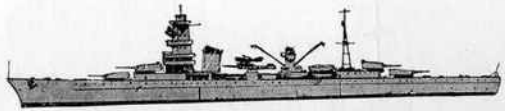


VULCAIN (*Repair Ship*).

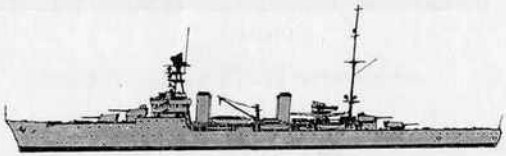


BÉARN (funnel on starboard side).

COMMDT. TESTE.

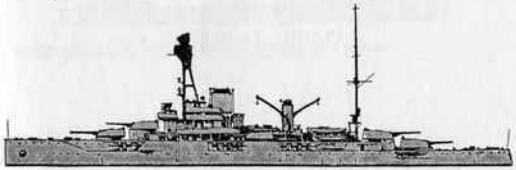


ALGERIE.



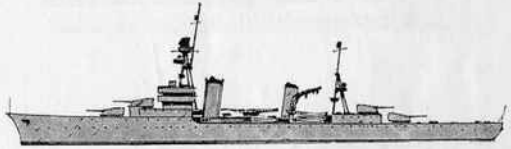
TOURVILLE, DUQUESNE.

FOCH.

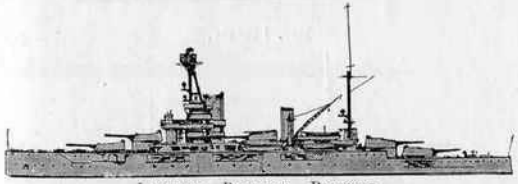


JEAN BART.

DUGUAY-TROUIN *class* (3).



COLBERT.

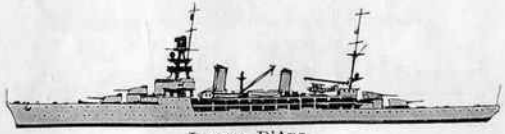


LORRAINE. BRETAGNE. PROVENCE.

PLUTON.

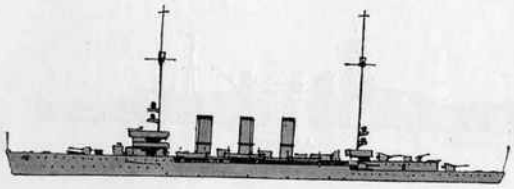
DUPLEIX.

PARIS.

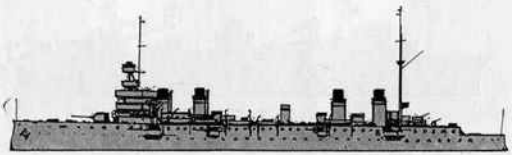


JEANNE D'ARC.

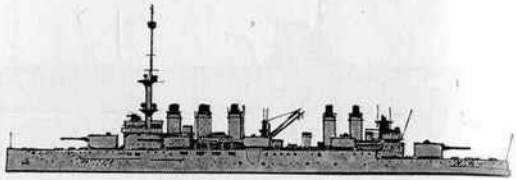
SUFFREN.



STRASBOURG.



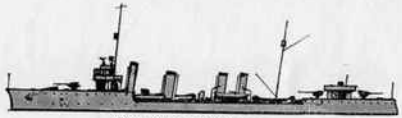
GUEYDON.



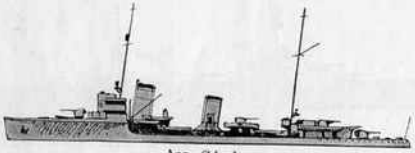
VOLTAIRE (no mainmast).
DIDEROT (main mast).

ALGÉRIEN *type*.

SIMOUN *type*.

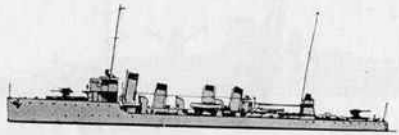


OPINIÂTRE, TÉMÉRAIRE.



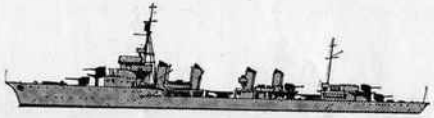
AM. SÉNÈS.

CHACAL *type*.

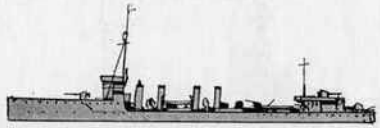


MAT. LEBLANC.

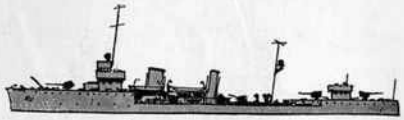
MAZARÉ, VESCO.



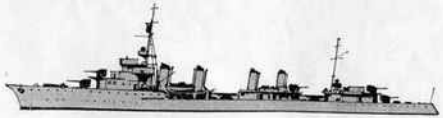
CASSARD *type*.



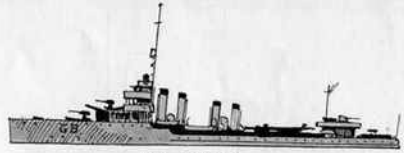
ENSEIGNE ROUX, MEC.-PR. LESTIN.



AVENTURIER, INTRÉPIDE.



GUÉPARD *type*.



ENS. GABOLDE.

SUBMARINES.—

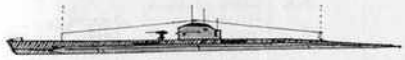
AMAZONE II, ARMIDE.

DAPHNÉ.

M. CALLOT.

REDOUTABLE *class.*

TURQUOISE *class.*



REQUIN *class.*

BELLONE *type.*

FULTON, JOESSEL.

P. CHAILLEY.

DUPUY DE LÔME, SANÉ, LAGRANGE, LAPLACE, REGNAULT, ROMAZZOTTI.

R. AUDRY.

P. MARRAST.

J. CORRE, CARISSAN, TRINITÉ-SCHILLEMANS.

HALBRONN.

SIRÉNE *type.*

V. RÉVEILLE.

J. ROULIER *type.*

GUSTAVE ZÉDÉ.

H. FOURNIER, O'BYRNE.

SURCOUF.

(I) Forces Navales Metropolitaines.

1st FLEET

Battle Fleet.

LORRAINE (F) — JEAN BART
BRETAGNE — PROVENCE
Carrier: BÉARN
Aircraft Tender: CDT. TESTE

Light Divisions

1st.

FOCH (F) — DUPLEIX
COLBERT — DUQUESNE
TOURVILLE — SUFFREN

7th. — 5th.

TARTU (F) — GERFAUT
CASSARD — AIGLE
ALBATROSS — VAUTOUR
VALMY — VERDUN — JAGUAR

Torpedo Divisions

GUEPARD (F)

5th. — 9th.

CYCLONE — FOUDROYANT
SIROCCO — BASQUE
TEMPÊTE — FORBIN

7th. — 2nd.

LE MARS — BORDELAIS
LA PALME — FOUGUEUX
BOULONNAIS — FRONDEUR

MISTRAL — TROMBE — SIMOUN
TYPHON — TORNADE — TRAMONTANE
ALCYON — LE FORTUNE — BRESTOIS
LA RAILLEUSE

Submarines

3rd Flotilla

SUIPPE (Scout)

ACTEON — PHENIX
PROTEE — L'ESPOIR
ACHERON — MONGE
VENGEUR — PEGASE — REDOUTABLE
FRESNEL

Train

NANCY — CHAMPLAIN
RHONE — ARROYO
RANCE — FRAICHE

Division d'Instruction

PARIS (F) — **Torpedo**
CONDORCET — **Electricians**
COURBET — **Gunnery**
JULES MICHELET
PLUTON

9th. Light Division

TIGRE — PANTHERE

5th. Scouting Flotilla

SCARPE — YSER — ENGAGEANTE
RHIN — VULCAIN

2nd FLEET

Light Divisions

2nd.

DUGUAY-TROUIN (F) — LAMOTTE-PICQUET

4th. — 6th. — 3rd.

BISON (F) — MAILLE-BREZE — CHACAL
MILAN — KERSAINT — LYNX
EPERVIER — VAUQUELIN — LEOPARD
LION — VAURAN

Submarines

JULES VERNE (*depot*)

4th. Flotilla

SURCOUF — ACHILLE
HENRI-POINCARE — PERSEE
PONCELET — AJAX
PASCAL — PASTEUR — ARCHIMEDE — ARGO

Train

DURANCE — NIÈVRE — RUISSEAU

(II) Forces Navales d'-Outre-Mer.

(A) **China**

PRIMAUGUET (F)
DUMONT D'URVILLE
SAVORGNAN DE BRAZZA
ALGOL
REGULUS
TAHURE

Yang-Tse-Kiang

FRANCIS-GARNIER
DOUDART DE LAGREE
BALNY
LA GRANDIERE

Si-Kiang ARGUS

(B) **Levant.** DIANA. YPRES. VIMY.
(C) **Training Ship.** JEANNE D'ARC.
(D) **Channel and North Sea, etc.** QUENTIN-ROOSEVELT. ARDENT
(E) **Newfoundland.** VILLE D'YS
(F) **Atlantic** D'ENTRECASTEAUX
(G) **Indian Ocean** BOUGAINVILLE
(H) **Pacific.** ALDEBARAN

(III) Marine Aux Colonies.

(A) **Indo China.**

12th. Submarine Flotilla.

JOESSEL
FULTON

Scouts.

VITRY-LE-FRANÇOIS
CRAONNE
ALERTE
ANTARES
ALTAIR
MARNE

Gunboats.

COMDT. BOURDAIS
AVALANCHE
VIGILANTE

Surveying.

LAPEROUSE
ASTROLABE
OCTANT

(B) **Morocco.** MONDEMENT
(C) **Tahiti.** ZELEE

(IV) Regions Maritimes.

(A) **1st REGION.**

Submarines.

POLLUX

1st Flotilla.

ARIANE — DANAE
DIANE — EURYDICE
ANTIOPE — MEDUSE
AMAZONE — SIRENE
GALATEE

Reserve.

JEAN AUTRIC
PIERRE MARRAST
RENE AUDRY
PIERRE CHAILLEY
GUSTAVE ZÉDÉ

Surveying.

GASTON-RIVIER

Vedettes.

VTA 1
VTB 1
VTA 2

(B) **2nd REGION.**

Brest

2nd Torpedo Division.

L'ADROIT
ORAGE
OURAGAN
BOURRASQUE

Defense Littorale.

AISNE
BATAILLEUSE
IMPETUEUSE
SURVEILLANTE

Reserve S/ms.

DUPUY DE LOME — SANE
LEON MIGNOT — JEAN ROULIER
HALBRONN — AMPHITRITE II
GORGONE — BELLONE
HERMIONE — VICTOR REVEILLE

Lorient.

CH. 106, 107, 115

Rochefort.

CH. 63, 68

School Ships.

COUCY — VAUQUOIS — ANCRE
MEUSE — ETOURDI — MUTIN
BELLE-POULE
ETOILE — CONQUERANTE
REMIREMONT — ENSEIGNE-HENRY
RAILLEUR — AUDACIEUSE
SYLPHE — LURONNE

Surveying.

ULITE — CHIMERE

Transport.

JEANNE ET GENEVIRVE

(C) **3rd REGION.**

Toulon

13th. Torpedo Division.

AMIRAL SÉNÈS
AVENTURIER
INTRÉPIDE
TÉMÉRAIRE

Defense Littorale.

DILIGENTE
DÉDAIGNEUSE
HAMELIN

5th. Flotilla of S/ms.

REQUIN — ORION — DORIS
PHOQUE — ONDINE — CIRCE
NARVAL — ARETHUSE — CALYPSO
SAPHIR — ATALANTE — NAUTILUS
RUBIS — THETIS — ARGONAUTE
TURQUOISE

Reserve S/ms.

NEREIDE (*target*) — DAPHNÉ
LAGRANGE — CARISSAN
RAMOZOTTI — TRINITÉ SCHILLEMANS
REGNAULT — JEAN CORRE
LAPLACE — O'BYRNE
HENRI FOURNIER — MAURICE CALLOT

School Ships.

LES ÉPARGES — PRIMEVÈRE

Transport.

FORFAIT — COETLOGON

(D) **4th REGION.**

Bizerta.

12th. Torpedo Division.

ENSEIGNE GAROLDE
ENSEIGNE ROUX
MECH. PRIN. LESTIN
MATELOT LEBLANC

Defense Littorale.

AGILE
ALFRED DE COURCY
CH. 102, 113, 114
CASTOR

6th. Flotilla of S/ms.

SOUFFLEUR — AMPHITRITE
MARSOUIN — ORPHEE
ESPADON — OREADE
CAIMAN — LA PSYCHE
MORSE — NYMPHE
DAUPHIN — NAIADE

Reserve S/ms.

ATALANTE II. — AMAZONE II. — ARMIDE

Algiers.

CH. 104, 105, 116

School Ships.

BAPAUME — CH. 110

Surveying.

BEAUTEMPS-BEAUPRÉ
ESTAFETTE
SENTINELLE

SUMMARY OF NAVAL FORCES.

	Building	Under age	Over age
10 *Battleships.*			
Dunkerque	1	—	—
Provence	—	3	—
Courbet	—	3	—
Voltaire	—	—	3
1 *Aircraft Carrier.*			
Bearn	—	1	—
1 *Aircraft Tender.*			
Cdt. Teste	—	1	—
7 *Large Cruisers.*			
Tourville	—	6	—
Algerie	—	1	—
4 *Old Armoured Cruisers.*			
Michelet	—	—	1
Renan	—	—	2
Gueydon	—	—	1
12 *Cruisers.*			
La Galissonnière ..	6	—	—
E. Bertin	1	—	—
Jeanne D'Arc ..	—	1	—
Duquay Trouin ..	—	3	—
Strasbourg	—	—	1
1 *Cruiser Minelayer.*			
Pluton	—	1	—
32 *Large Destroyers.*			
Am. Sénès	—	1	—
Jaguar	—	6	—
Guépard	—	6	—
Aigle	—	6	—
Cassard	—	5	—
Fantasque	7	—	—

	Building	Under age	Over age
46 *Destroyers.*			
Le Hardi	1	—	—
Adroit	—	14	—
Simoun	—	12	—
M. Leblanc	—	—	1
Algerien	—	—	10
Téméraire	—	—	3
E. Gabolde	—	1	—
Bory	—	—	2
Deligny	—	—	2
12 *Escorteurs.*	12	—	—
4 *Torpedo Boats.*	—	—	4
108 *Submarines.*			
Surcouf	—	1	—
Redoutable	11	10	—
Requin	—	9	—
Saphir	2	4	—
P. Chailley	—	1	—
M. Callot	—	1	—
L. Mignot	—	—	4
Halbronn	—	—	1
Fulton	—	—	2
Dupuy de Lôme ..	—	—	2
Lagrange	—	2	2
Diane	7	13	—
R. Audry	—	1	—
Gustave Zédé	—	—	1
Sirène	—	11	—
V. Réveille	—	—	1
Armide	—	—	2
Daphne	—	—	1
Bellone	—	—	3
Fournier	—	—	2
Carissan	—	—	3
Atlante II	—	—	2

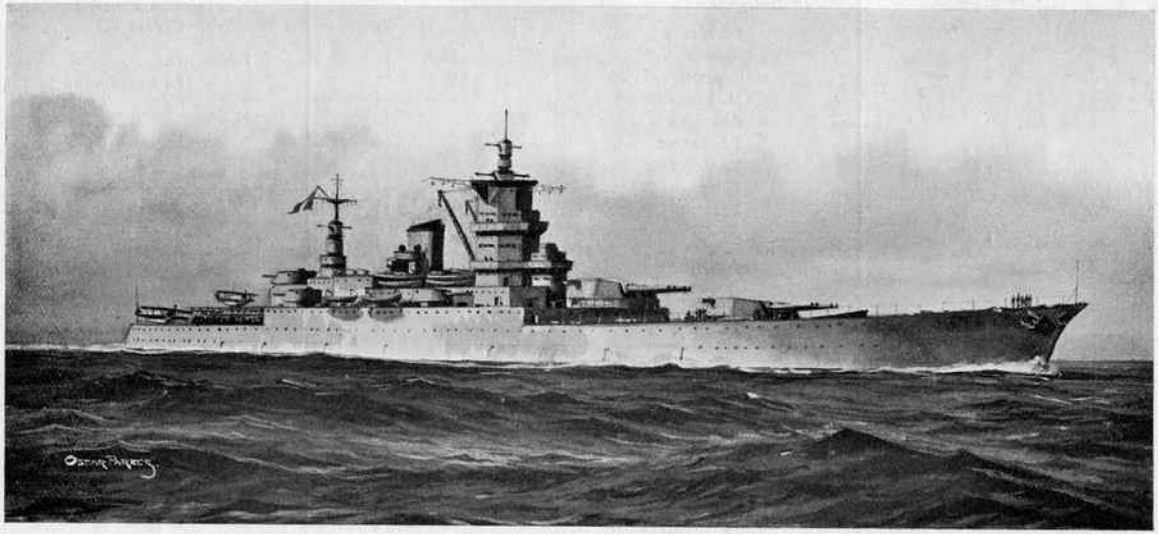
	Building	Under age	Over age
2 *Minelayers.*			
Castor	—	2	—
1 *Netlayers.*			
Le Gladiateur	1	—	—
51 *Sloops.*			
Bougainville	3	4	—
Algol	—	5	—
Dubourdieu	—	5	—
Ailette	—	5	—
Ville d'Ys	—	1	—
Arras	—	28	—
24 *Despatch Vessels.*			
Aisne	—	6	—
Conquérante	—	1	—
Diligente	—	4	—
Alerte	—	13	—
4 *Minesweepers.*			
Granit	—	4	—
42 *Submarine Chasers.*			
CH 1—4	—	4	—
CH 102—116	—	15	—
C 25—C 98	—	23	—
10 *River Gunboats.*			
F. Garnier	—	1	—
Argus	—	2	—
Balny	—	1	—
Lagrandière	—	1	—
D. de Lagrée	—	1	—
Mytho	2	—	—
Avalanche	—	2	—
8 *Patrol and Fishing Vessels.* ..	—	8	—
13 *C.M.B.*	—	12	—
8 *Surveying Ships*	—	8	—
11 *Auxiliaries*	—	11	—
13 *Oilers*	—	13	—
1 *Armed Yacht*	—	1	—

1932—BATTLESHIP.

DUNKERQUE (Brest, ordered October, 1932).

Displacement, 26,500 tons.

Dimensions: Length (*o.a.*) 688·9 feet. Beam: 98·4 feet. Draught: — feet.

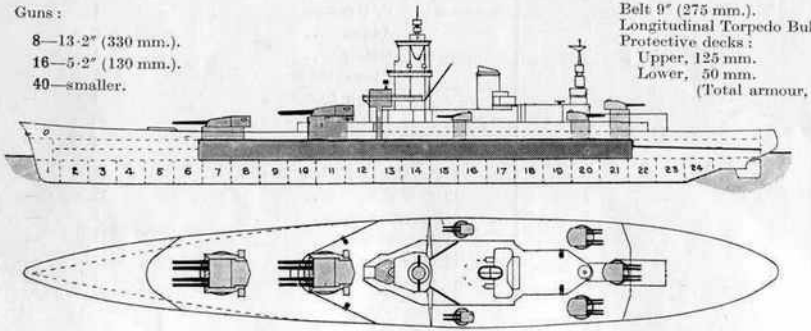


1933 *Drawing, Oscar Parkes.*

Guns:

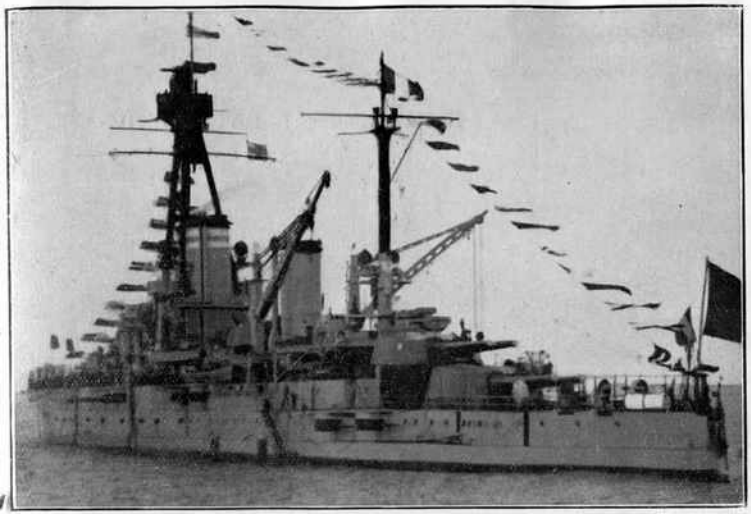
8—13·2″ (330 mm.).
16—5·2″ (130 mm.).
40—smaller.

Belt 9″ (275 mm.).
Longitudinal Torpedo Bulkhead, 40 mm.
Protective decks:
Upper, 125 mm.
Lower, 50 mm.
(Total armour, 10,000 tons).

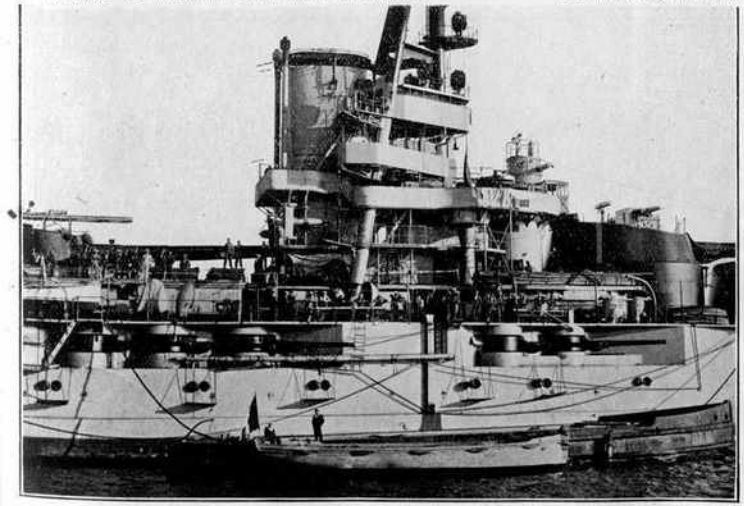


H.P. 100,000 = 29·5 kts. Radius 7500 at 15 kts. 6 boilers.

General Notes.—The armament of these ships is to consist of fifteen 6.1″ guns and not of 5″ guns as has been supposed. They are thus by far the most powerfully armed cruisers in the world for their tonnage. It is, however, difficult to reconcile the dimensions given above (which were communicated from a reliable source) with the official displacement and until we know the correct figures no critical survey of them is of much value. In passing, it may be noted that the dimensions given suggest a tonnage of 9590 using our "*Exeter*" formula and 9265 tons if based on that of the "*Atago*," which would be more in keeping with the 10,000 tons required by the U.S.A. constructors for a fifteen 6″ gunned cruiser. The shallow draft should be noted, and this feature is common to the "*Ryujo*" (15 feet) and the new torpedo boats (5·8 feet.)



LORRAINE. (Now high main Topmast and no fore Topmast.) 1928 *Photo, W. A. Fuller, Esq.*



BRETAGNE. July, 1928 *Photo, R. Perkins, Esq.*

(BRETAGNE CLASS—3 SHIPS.)

BRETAGNE (April. 21, '13), **LORRAINE** (September, 30, '13), **PROVENCE** (April, 20, '13).

Standard displacement. 22,189 tons. Complement, 1102 (+ 57 as Flagship.)

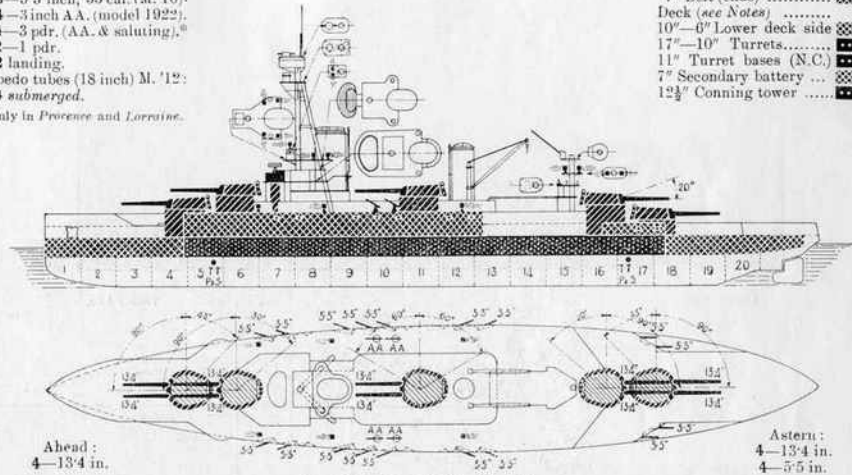
Length (*waterline*), 541½ feet. Beam, 88½ feet. *Maximum* draught, 29 feet. Length *over all*, 544½ feet.

Guns (M. '12. **Dir. Con.**):
10—13·4 inch, 45 cal.
18—5·5 inch, 55 cal. (M.'10).
4—3 inch AA. (model 1922).
4—3 pdr. (AA. & saluting).*
2—1 pdr.
2 landing.
Torpedo tubes (18 inch) M. '12:
4 *submerged*.

* Only in *Provence* and *Lorraine*.

Note.—Belt now ceases 10 metres short of bows, a transverse bulkhead having been inserted at this point.

Armour (chromo-nickel):
10¾″ Belt (amidships) ...
7″ Belt (ends) .....
Deck (*see Notes*) .....
10″—6″ Lower deck side
17″—10″ Turrets.....
11″ Turret bases (N.C.)
7″ Secondary battery ...
12½″ Conning tower .....



Ahead:
4—13·4 in.

Astern:
4—13·4 in.
4—5·5 in.

Broadside: **10**—13·4 in., **9**—5·5 in.

Machinery: Parsons turbine. 4 screws. Boilers: see *Notes*. Designed H.P. 29,000=20 kts.
Coal: *normal* 900 tons; *maximum* 2680 tons. Also 300 tons oil.

**Gunnery Notes.*—Carry 100 rounds per gun for 13·4 inch and 275 per gun for the 5·5 inch. Janney electro-hydraulic mountings to big guns. Special cooling for magazines—temperature 77° Fahr. Magazines can be completely flooded inside ten minutes. Height of guns above l.w.l.: 1st turret, 30½ feet; 2nd, 37½ feet; 3rd, 33½ feet; 4th, 28½ feet; 5th, 21½ feet. Arcs of training: Nos. 1 and 5, 270°; Nos. 2 & 4, 280°; No. 3, 120° either beam. Arcs of secondary guns; 120°. Big gun elevation increased from 18° to 23°: max. range = 23,000 metres.

**Torpedo Notes.*—8—36″ and 2—30″ searchlights. 4—200 k.w. dynamos. Torpedoes: 24 carried. Also 30 blockade mines.

**Armour Notes.*—Turrets of maximum thickness at ports, instead of uniform thickness as in *J. Bart* type. According to the 1917 Edition of "Flottes de Combat," the barbette shields are not of uniform design. Those for the end barbettes are 13·4″ thick, for the super-firing barbettes 21″ thick and for the central barbette 15¾″ thick. The double bottom is carried to the under side of protective deck. Main belt is 13½ feet wide, 5 7/12 feet below and 7½ above l.w.l. Battery 197 feet long with 7 in. bulkheads. Protective decks: lower 2″ slopes, 1½″ flat. Upper, 1½″ flat on top of belt.

**Engineering Notes.*—Boilers: *Bretagne*, 24 Penhoet: *Lorraine*, 24 Belleville: *Provence*, 18 Penhoet. Grate area: *Bretagne*, 2,090 sq. feet; *Lorraine*, 2,030 sq. feet; *Provence*, 1,492 sq. feet. Heating surface: *Bretagne*, 64,660 sq. feet; *Lorraine*, 63,700 sq. feet; *Provence*, 62,585 sq. feet. Pressure, 256 lbs. per sq. in. 300 turbine r.p.m. 2,700 tons coal in 13 bunkers, 300 tons oil in 4 tanks. Endurance: 4,700 miles at 10 kts. 2,800 at 18½ kts. 8 boilers, converted to oil-burning during last refits of each ship.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Turbines*	*Boilers*	*Best recent speed*
Bretagne	Brest	La Seyne	July '12	Sept.'15	21·4 kts.	Parsons	Niclausse	20·5
Lorraine	S.Nazaire (Pen.	S.Nazaire (Pen.)	Nov. '12	July '16		Parsons	Belleville	
Provence	S. Lorient	La Seyne	June '12	June'15		Parsons	D.T.Guyot	

General Notes.—*B.*, *L.* and *P.* belong to the 1912 programme, one of them being a replace ship for the *Liberté*, blown up September, 1911. Estimated cost, £2,908,000 per ship=£126 per ton. *Lorraine* refitted and converted to partial oil-burning, 1929-30. *Bretagne* undergoing similar alterations at La Seyne and *Provence* at A. C. Loire.

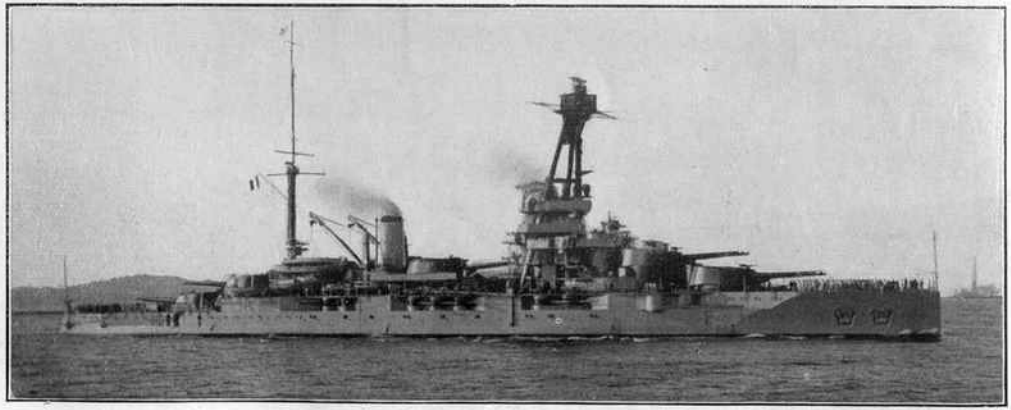
*Unofficial.

M

1912 FRENCH BATTLESHIPS.

BRETAGNE. 1930 *Photo.*

PROVENCE. 1930 *Photo, R. Perkins, Esq.*

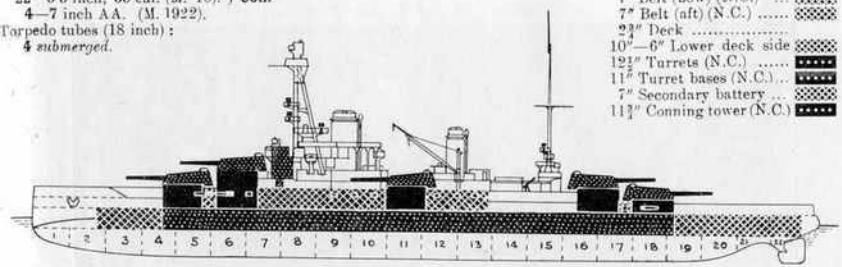


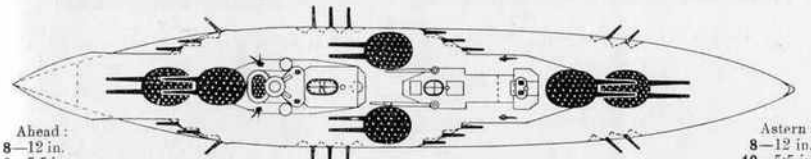
PROVENCE. *Oct.*, 1927 *Photo, Dussau (added* 1928).

COURBET (Sept. 23, '11), **JEAN BART** (Sept. 22, '11), **PARIS** (Sept. 28, '12).
Standard displacement, W.D. = 22,189 tons. *Full load*, 25,850 tons. Complement, 1108.
Length (*p.p.*), 541½ feet. Beam, 88½ feet. *Maximum* draught, 29 feet. Length *over all*, 544½ feet.

Guns (M. '06—10): Dir. / Con.
12—12 inch, 45 cal.
22—5·5 inch, 55 cal. (M. '10).
4—7 inch AA. (M. 1922).
Torpedo tubes (18 inch):
4 *submerged*.

Armour: (Chromo-nickel):
11¾″ Belt (amidships).....
7″ Belt (bow) (N.C.) ...
7″ Belt (aft) (N.C.) .....
2¾″ Deck .....
10″—6″ Lower deck side
12¾″ Turrets (N.C.) .....
11″ Turret bases (N.C.)..
7″ Secondary battery ...
11¾″ Conning tower (N.C.)

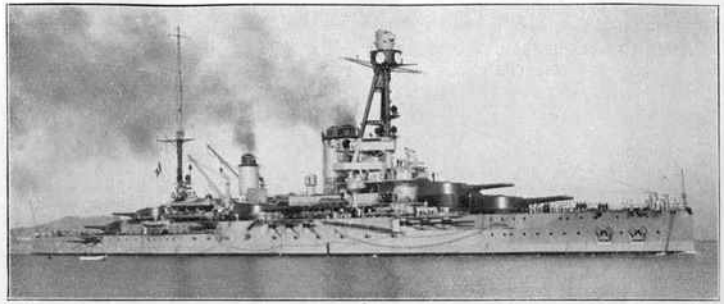




Ahead:
8—12 in.
6—5·5 in.

Astern:
8—12 in.
10—5·5 in.

Broadside: **10**—12 in., **11**—5·5 in.



PARIS 1929 *Photo, M. Bar, Toulon.*

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials Full power*	*Boilers*	*Best recent speed*
J. Bart	Brest	F.&C. de la Méd	Nov., '10	June '13	=22·04	Belleville	20
Courbet	Lorient	St. N'z're (Ch. de l'Atlantique)	Sept., '10	Sept. '13	=20·81	Belleville & Du Temple	20
Paris	La Seyne	F.&C. de la Méd	Nov., '11	Aug. '14	35,610=21·6	Belleville	20,5

General Notes—Designed by M. Lyasse. Construction very fine and highly finished in details. Average cost about £2,475,000. The heavy weight of deep 7″ belt at ends made them pitch in a head sea, hence modification noted against plans above. On the other hand, *J. Bart* was twice torpedoed in the bows by an Austrian submarine and her heavy bow belt contributed largely to her survival. *France*, of this class, foundered in Quiberon Bay, Aug., 1922. All this class have been reconstructed, 1928–1929. *Courbet* has been completely reboilered at La Seyne (1929) with ex-Normandie type boilers, and is now gunnery training-ship instead of *Ernest Renan*.

Machinery: Parsons turbine. 4 screws. 24 Boilers: Penhoët Designed H.P. 28,000 = 20 kts. Coal: *normal*, 906 tons; *maximum*, 2452 tons; also 450 tons oil (two boiler rooms are fitted for oil burning). *Endurance —— at 10 kts., 2700 at 18¾ kts.

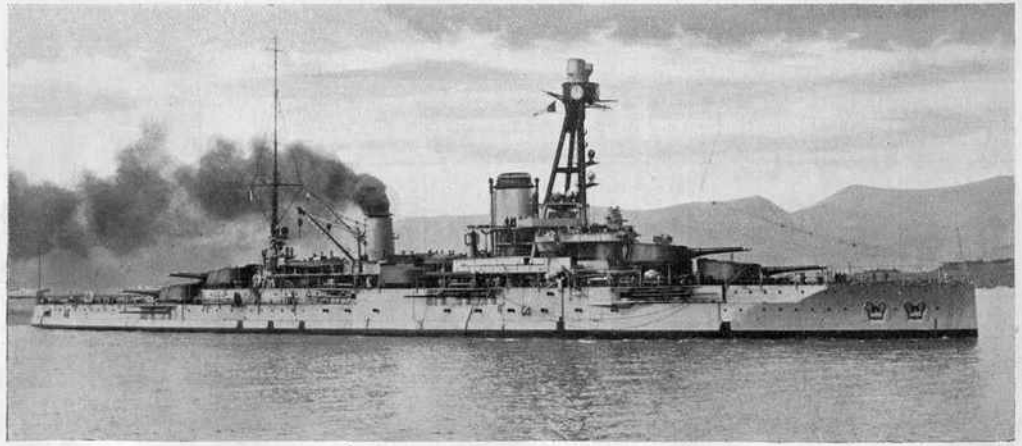
Armour Notes—Belt, 13½ feet wide; 7¾ feet of it above water, 5½ feet of it below. For about 325 feet it is 10¾″. Upper belt, 7″ thick forms redoubt for secondary battery. The 4—5·5 inch aft. are in casemates. Prot. decks: 2¾″ curved from lower edge of belt to l.w.l. level. Above that a flat 1¾″ deck from end to end on top of main belt. Above again is a 1¼″ splinter deck against aerial attack. Conning tower is in three stories. 10¾″ communication tube. Two armoured fire control stations on top.

**Gunnery Notes*.—Amidship 12 inch 180°, the centre line turrets 270° each. The 5·5 inch 120°. Elevation of guns reported increased to give range of 24,000 metres. Height of guns above water: Turrets (1) 30½ feet, (2) 37¾ (amidships) 25 feet, (5) 28½ feet, (6) 21½ feet; upper deck battery, 5·5 inch, 21½ feet; main deck. 5·5 inch aft, 11¾ feet. Ammunition carried: 100 for each 12 in., 275 for each 5·5 inch, 300 for each 3 pdr. Westinghouse refrigerators in magazines. 77°F.

**Torpedo Notes*.—8 searchlights (36 inch), also 2—30 inch. Carries 12 torpedoes and 30 blockade mines.

**Engineering Notes*.—Outer shafts: H.P. turbines; inner, L.P. Condensers (2): 32,076 sq. feet cooling surface. Turbines: 300 r.p.m. Belleville oil fuel system.

* Unofficial.



COURBET. (*Jean Bart* similar, but goose neck cranes.) 1930 *Photo, Bar.*

OLD BATTLESHIPS (*Cuirassés de 2e rang*).

DANTON CLASS.—3 SHIPS.

DIDEROT (April, 1909), **CONDORCET** (April, 1909), and **VOLTAIRE** (Jan., 1909).

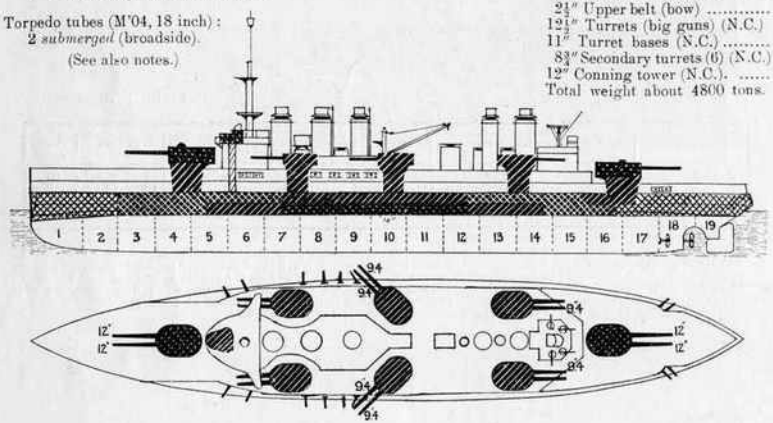
Standard displacement, 17,597 tons. Complement, 923.

Length (*w.l.*), 475¾ feet. Beam, 84¾ feet. *Mean* draught, 27 feet. *Max.* draught, 28¾ feet.
Length (*over all*), 481 feet.

Guns:
4—12 inch, 45 cal. (M '06).
12—9·4 inch, 49·5 cal. (M '02-'06).
*12—3 inch (none on board *Condorcet*).
2—3 in. AA. (on 9·4 inch turrets).

Torpedo tubes (M'04, 18 inch):
2 *submerged* (broadside).
(See also notes.)

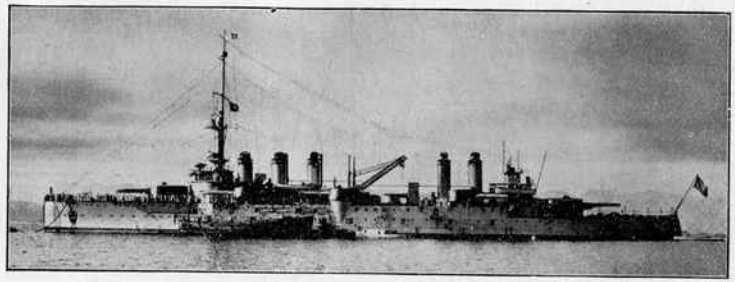
Armour:
10½″ Belt (amidships) ... .
6″ Belt (ends) .....
3″ Deck (flat on upper belt) ...
3″ Deck (below belt) .....
9″—6″ Lower deck side .....
2¼″ Upper belt (bow) .....
12⅛″ Turrets (big guns) (N.C.)
11″ Turret bases (N.C.) .....
8¾″ Secondary turrets (6) (N.C.)
12″ Conning tower (N.C.). .....
Total weight about 4800 tons.



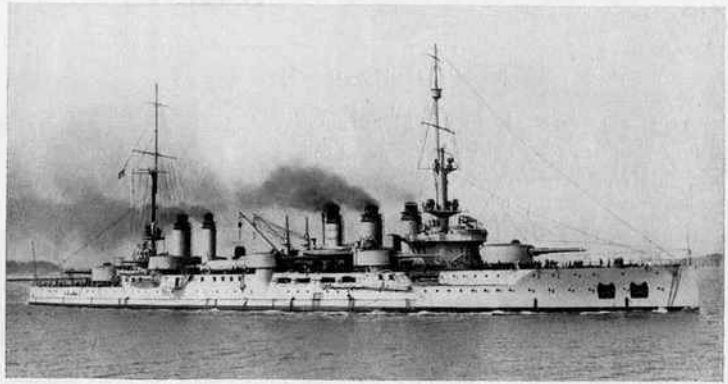
Machinery: Parsons turbine. 4 screws. Boilers: 26 Belleville or Niclausse (large tubes). Designed H.P. 22,500 = 19·25 kts. Coal: *normal* 965 tons: *maximum* 2100 tons. Endurance: *nominally*, 3750 miles at 10 kts., 2300 at 18½ kts. (See note below.)

Name.	*Builder.*	*Machinery.*	*Laid down*	*Completed.*	*Trials. 24 hrs.*	*10 hrs.*	*5 hrs.*	*Boilers*	*Best recent speed*
Diderot	St. Nazaire	St. Nazaire	Oct. '07	Sept. '11	= 18·4	= 19·48	= 19·9	Niclausse	14-16
Condorcet	St. Nazaire	St. Nazaire	Aug. '07	June '11	= 18·02	= 19·31	= 19·7	Niclausse	
Voltaire	La Seyne	F. & Ch., Médit.	July, '07	Aug. '11	= 18·60	= 19·78	= 20·66	Belleville	

General Notes.—Average cost, £2,190,000 each. They are not very successful ships, and consume large quantities of coals at cruising speed. Some have lateral anti-torpedo "caissons" along hull below waterline. *Danton* lost 1917. *Mirabeau* scrapped 1919. *Voltaire* twice torpedoed by U-boat during 1918 and repaired. Designed by M. Lhomme. *Verginaud* condemned 1921, and expended as a target for aircraft bombs. *Condorcet* and *Voltaire* refitted 1923-24. *Diderot* 1925, extra under-water protection being given at some sacrifice of speed. **Condorcet*, being attached to Torpedo School, carries several extra deck torpedo tubes for practice purposes and no 3″ gun battery.



VOLTAIRE. (*Condorcet* similar.) 1925 *Photo, by courtesy of the Ministry of Marine.*



DIDEROT. 1930 *Photo, by M. Bar.*

AIRCRAFT CARRIER. (*Bâtiment Porte-Avions.*)

BÉARN (F. & Ch. de la Mediterranée, La Seyne).

Laid down January, 1914, as a battleship of the "*Normandie*" class. Launched April, 1920, construction having been suspended during the war; re-designed as a Fleet Carrier and conversion begun at La Seyne in August, 1923. Finally completed May, 1927.

Standard displacement: 22,146 tons; 25,000 tons *full load.*

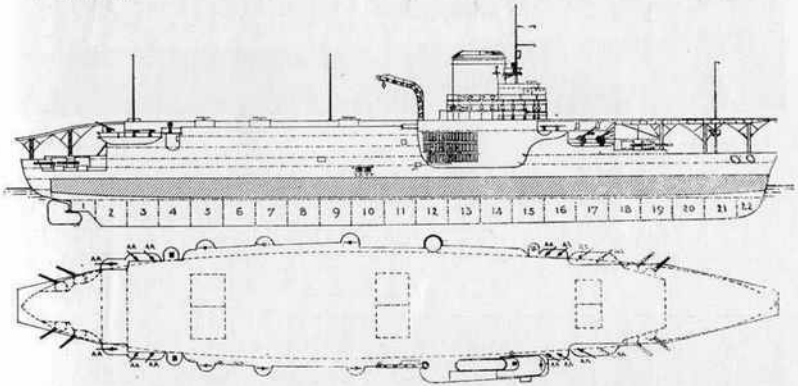
Dimensions: 576 (*w.l.*), 560 (*p.p.*) feet × 89 feet × 26 feet. (Extreme beam is 102 feet.)

Complement, 875.

Guns:
- **8**—6.1 inch.
- **6**—14 pdr. AA.
- **8**—3 pdr. AA.
- **12** M.G.

Tubes:
- **4**—21.7 inch

Armour:
- 1" Main deck .....
- 1—2¾" Lower deck .....
- 1" Flight deck .....
- 3½" Side armour to 6½ feet below w.l.



Total designed H.P. 37,200 = 21·5 kts. Fitted with 2 turbines on inner shafts (for main propulsion) = 24,000 S.H.P. and 2 sets reciprocating engines on outer shafts (for cruising and manœuvring purposes only) = 15,000 I.H.P. This machinery was originally ordered for *Normandie*. 12 Du Temple-Normand small tube boilers. 4 screws. Oil fuel: 2,160 tons. Radius: 6,000 miles at 10 kts. Is capable of accommodating over 40 planes.

At a height of 51 feet from the waterline is the flight deck, 600 feet long. An external gangway at a level 3 ft. 9 in. lower allows personnel to move about clear of the flight deck. Underneath the flight deck is the central hangar, in which are housed 5 torpedo planes, 5 reconnaissance planes, and 7 fighter planes (part of the total of 40 carried). Under this hangar again, are workshops for assembling and repairs, and for accommodation of partially equipped planes. The hangar and workshops can be divided into two portions, by means of asbestos curtains.

Hangar and workshops are equipped with overhead transporter cranes for the rapid manipulation of heavy weights, and a special type of derrick (12 tons capacity, 33 feet radius) is fitted on the starboard side of ship, abaft funnel.

Planes are carried up to flight deck by means of three electric lifts, the smallest being 27 × 40 feet and the largest 50 × 50 feet. On a lift, forward, is a charthouse which by this means can be raised above or dropped below flight deck.

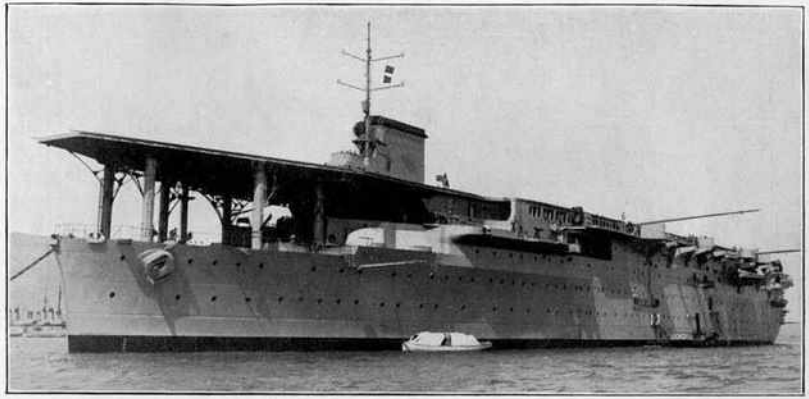
Smoke is diluted with cold air to avoid eddies in surrounding atmosphere.

Other items of equipment comprise a special hot water service for filling radiators of seaplanes, and a pneumatic distributing system for conveying their fuel.

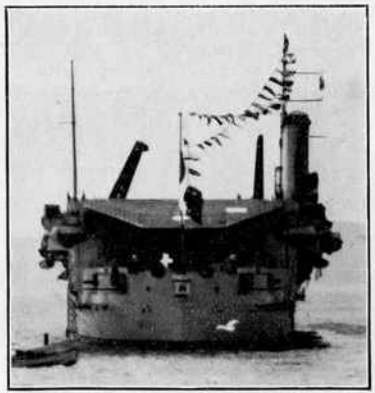
Stores carried include 3530 cubic ft. of petrol, under inert gas, and 530 cubic feet of oil.

It has been stated that owing to lack of space on flight deck, only about one fourth of the total number of planes carried can be employed simultaneously.

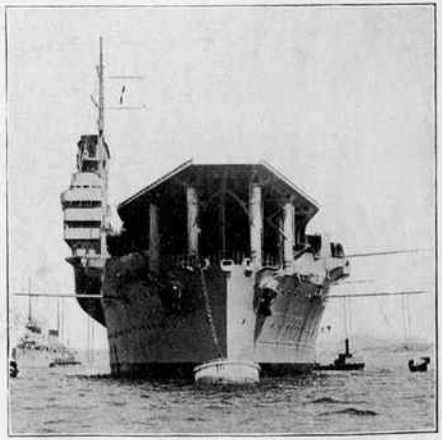
Trials.—On trial a speed of 21·5 kts. was reached with over 40,000 H.P.



BÉARN, (fore end of flight deck now curved down). 1927 *Photo, Marius Bar, Toulon.*

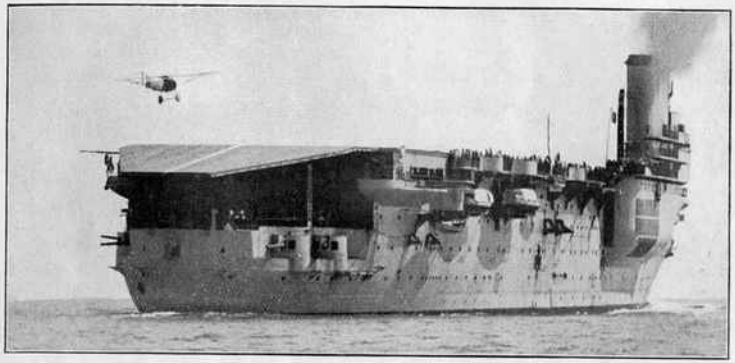


1928 *Photo, W. A. Fuller, Esq.*
BÉARN, showing lift opening up.



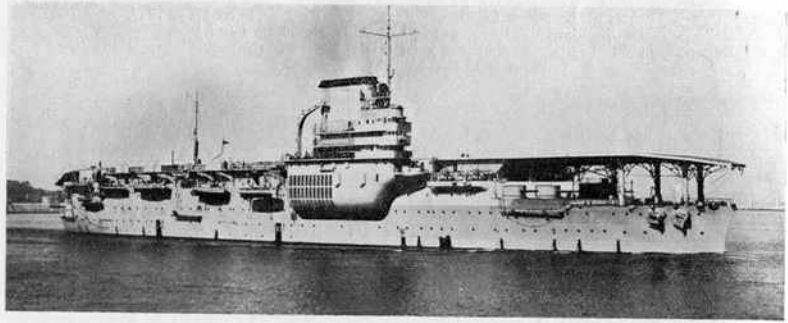
BÉARN, bow view. 1927 *Photo, M. Bar.*

AIRCRAFT TENDER. (*Transport d'Aviation.*)



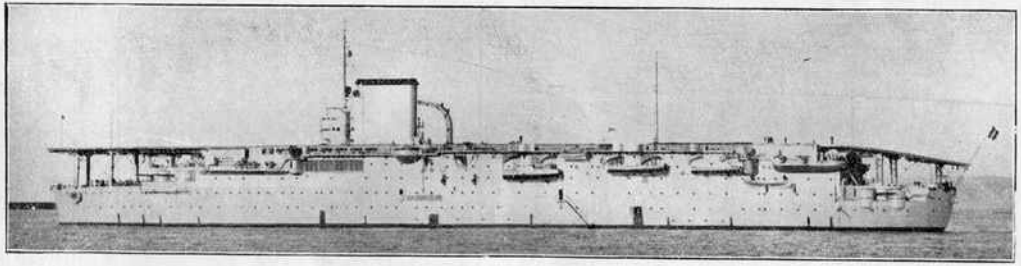
BÉARN.

1927 *Photo Marius Bar, Toulon.*



Note alteration to flight deck at bows.

1930 *Photo, M. Bar.*



BÉARN.

1928 *Photo, R. Perkins, Esq.*

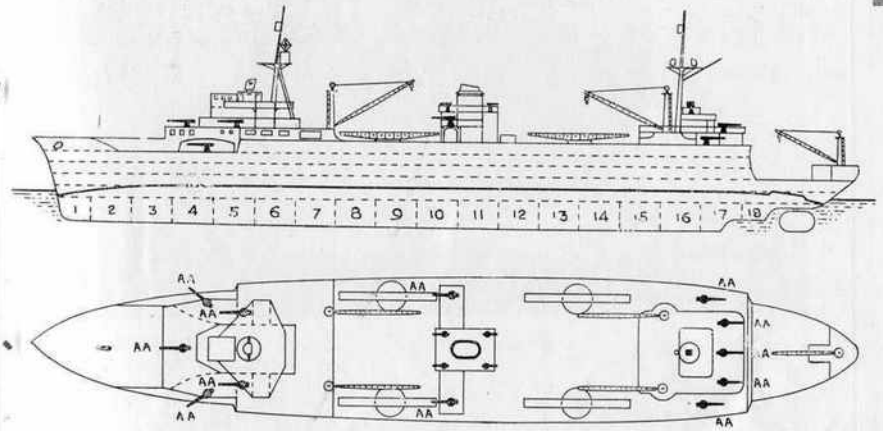
COMMANDANT TESTE. (April 12th, 1929).

Standard Displacement, 10,000 tons. Length, 512¾ feet (*p.p.*), 558 feet (*o.a.*).
Beam, 71½ feet (88½ feet, extreme). Draught, 23½ feet. Complement, 649.

Guns:
12—3.9 inch AA.
8—3 pdr. AA.
12 M.G.

Armour:
2" (H.T.?) side at waterline and a
1½" protective deck over engine and boiler spaces.

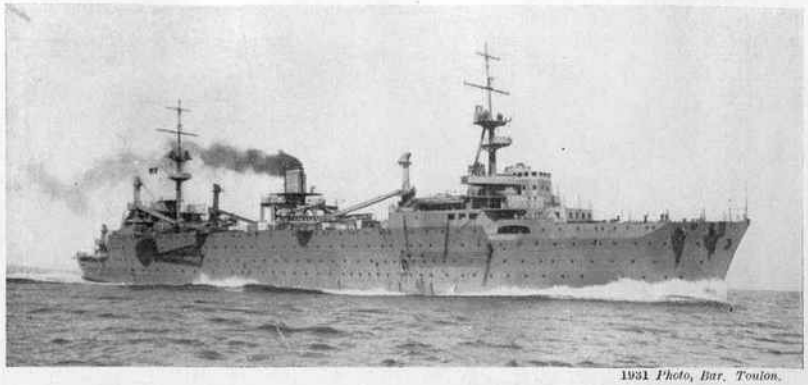
Hangar:
84 × 27 × 7 metres.
275 × 88 × 23 feet.



Machinery: 2 Schneider-Zoelly geared turbines. 2 screws. 4 Yarrow-Loire boilers (mixed firing).
S.H.P. 21,000 = 21.37 kts. Radius of action: 6000 miles at 10 kts. Fuel:— Oil 290, coal 720 tons.

Notes.—This vessel is intended to act as a tender to *Béarn*, and as a reserve from which aircraft supplies can be drawn by cruisers which carry planes. Authorised under 1926 Programme, she was ordered in May, 1927, from the Société d'Exploitation des Chantiers de la Gironde, Bordeaux (a subsidiary of the Schneider group). She carries 4 catapults, Penhoët type.

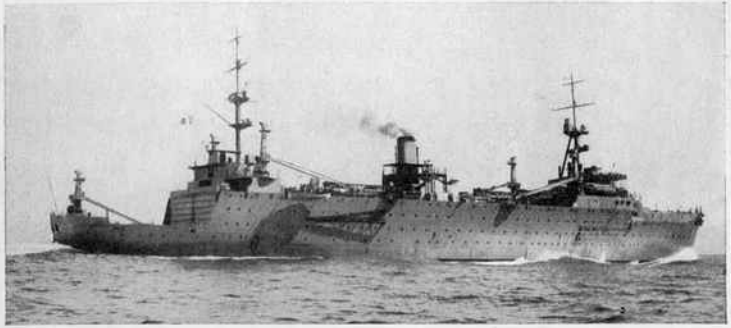
Special Note.—The small transports *Hamelin* and *A. de Courcy* (described elsewhere) are now fitted as Aircraft Tenders their official rating being "Ravitailleurs d'Aviation."



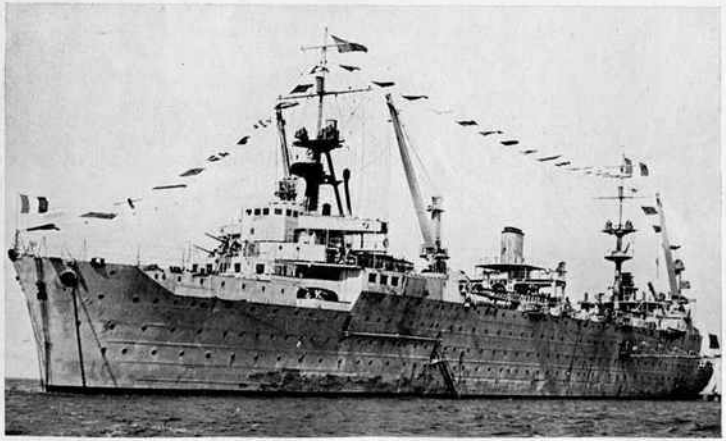
1931 *Photo, Bar. Toulon.*

1931 *Photo, Official.*

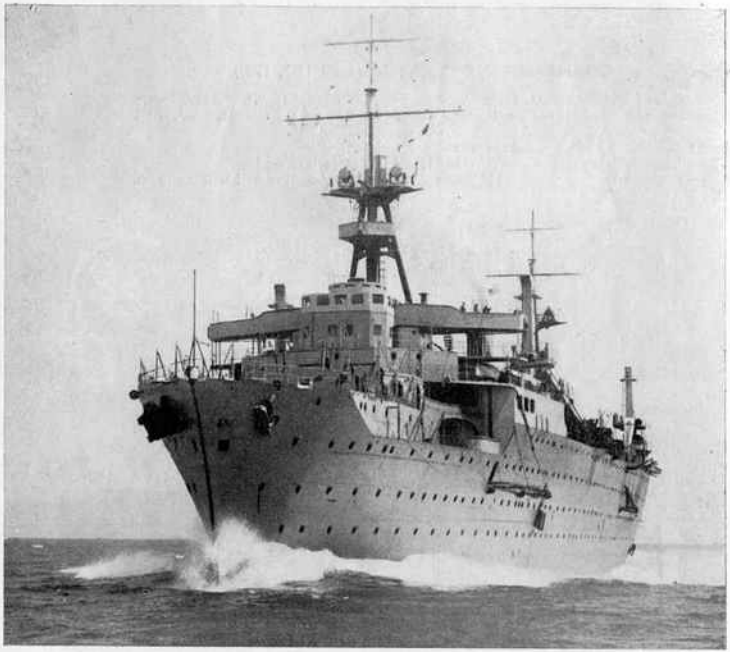
AIRCRAFT TENDER.



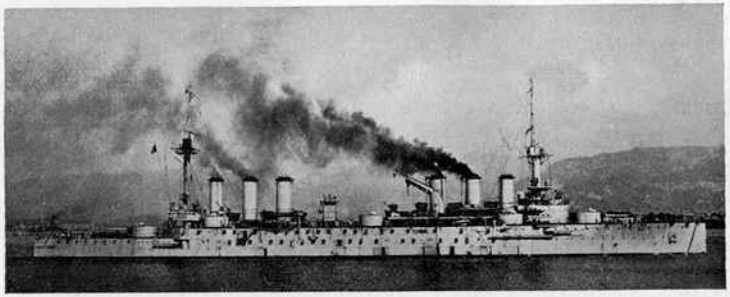
COMMANDANT TESTE (guns not mounted). 1931 *Photo, Bar, Toulon.*



1933 *Photo ,Leslie H .Howard, Esq.*



1931 *Photo, Official.*



1930 *Photo.*

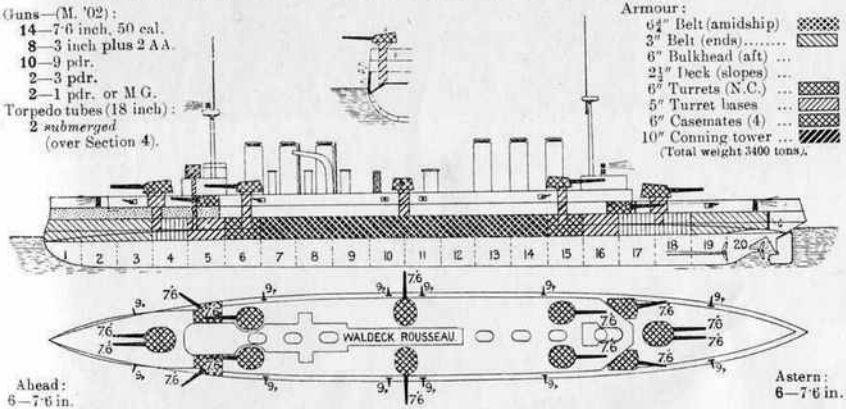
WALDECK-ROUSSEAU (March, 1908).

Standard displacement, 12,617 tons. Complement, 892.

Length (*waterline*), 515 feet. Beam, 70¾ feet. *Max.* draught, 27½ feet. Length *over all*, 521¼ feet.

Guns—(M. '02):
14—7·6 inch, 50 cal.
8—3 inch plus 2 AA.
10—9 pdr.
2—3 pdr.
2—1 pdr. or M.G.
Torpedo tubes (18 inch):
2 *submerged* (over Section 4).

Armour:
6½" Belt (amidship)
3" Belt (ends).....
6" Bulkhead (aft) ...
2½" Deck (slopes) ...
6" Turrets (N.C.) ...
5" Turret bases ...
6" Casemates (4) ...
10" Conning tower ...
(Total weight 3400 tons).



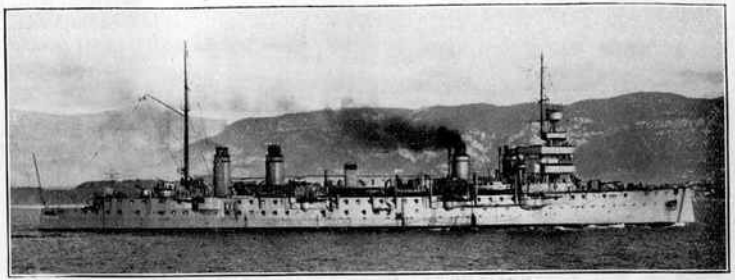
Ahead: 6—7·6 in.

Astern: **6**—7·6 in.

Broadside: **9**—7·6 in.

Machinery: 3 sets vertical triple expansion. 3 screws. Boilers (large tube): *See Notes.* Designed H.P. 36,000=23 kts. Coal: *normal* 1,242 tons; *maximum* 1,900 tons. *Nominal endurance:* 6560 miles at 10 kts. 2 seaplanes added to equipment, 1923. *E. Quinet* **Lost Jan. 1930.**

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials:* 30 boilers 10 hours	*Trials:* Full power 3 hours	*Boilers*	*Best recent speed*
W. Rousseau	Lorient Yard		June,'06	1911		35,286=23·1	42 Niclausse	20



GUEYDON. 1927 *Photo, M. Bar, Toulon.*

(*Sea-going Gunnery Training Ship.*)

GUEYDON (September, 1899). Displacement: 8189 tons. Length (*waterline*), 452¾ feet. Beam, 63¾ feet. *Max.* draught, 25 feet. Length (*over all*), 459 feet. Guns: **8**—5.5 inch, **4**—3 inch AA., **12**—40 m/m., **4**—37 m/m. Armour (Harvey Nickel): 6" Belt (ends), 3" Forecastle, 2"—1", ⅜" Decks, 3"—2¼" Lower deck side, 7¾" Casemates (8), 6¼" Conning tower. Machinery: 2 sets vertical triple expansion. 3 screws. Boilers: 20 Niclausse. Designed H.P. 19,600=21 kts. Coal: *normal* 1030 tons, *maximum* 1650 tons. Begun at Lorient, 1898; completed, 1902. Complement, 487. Reconstructed, with tripod mast and other modifications, 1926.

The following old armoured cruisers are in reserve.

JULES MICHELET 1905
ERNEST RENAN 1906

1930 CRUISER.

ALGERIE, (Brest, May 21st, 1932).

Standard Displacement, 10,000 tons. Complement,

Length, (*p.p.*), 607 feet; (*o.a.*), 617 feet. Beam, 65 feet. Draught, 20 feet.

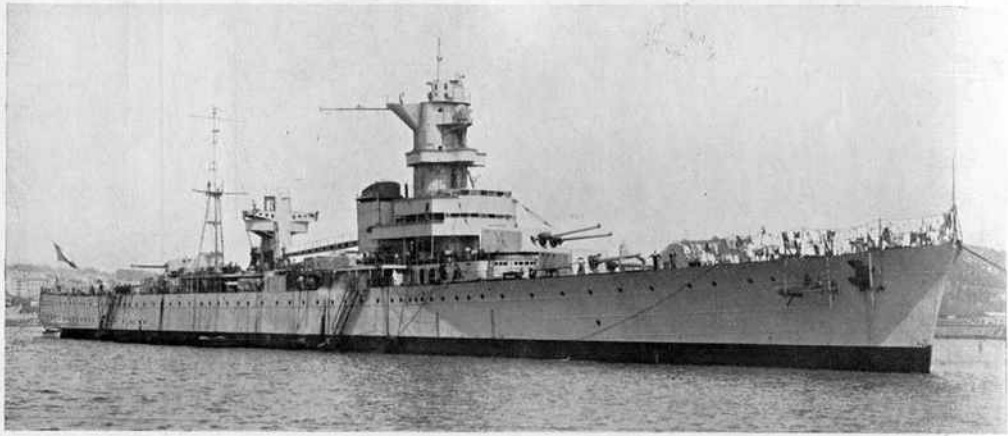
Guns: 8—8″ (new model).
12—4″ AA.
8—37 mm.

Armour:
Belt—4 inch.
Inside bulges, with hull thickness of 40 mm.

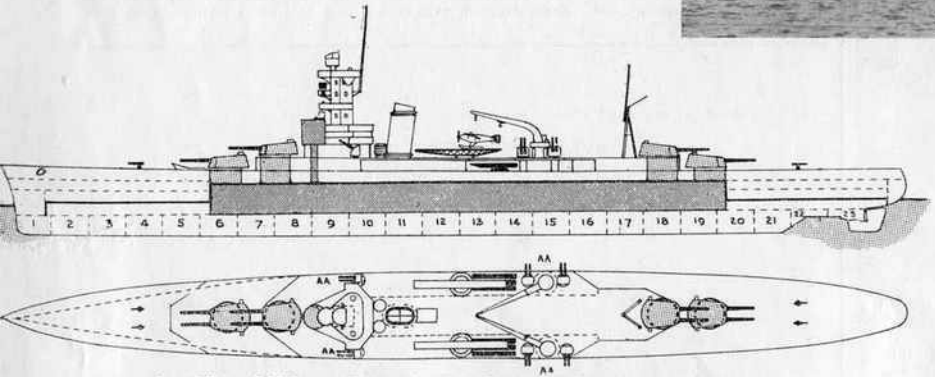
Torpedo tubes:
6—21 inch in triples.

Catapults: —2.

Machinery: 4 Ratean geared Turbines. Boilers: 8 Penhoët.
D.H.P. 84,000=32 kts. Radius: 5000 miles at 15 kts. Fuel: tons.

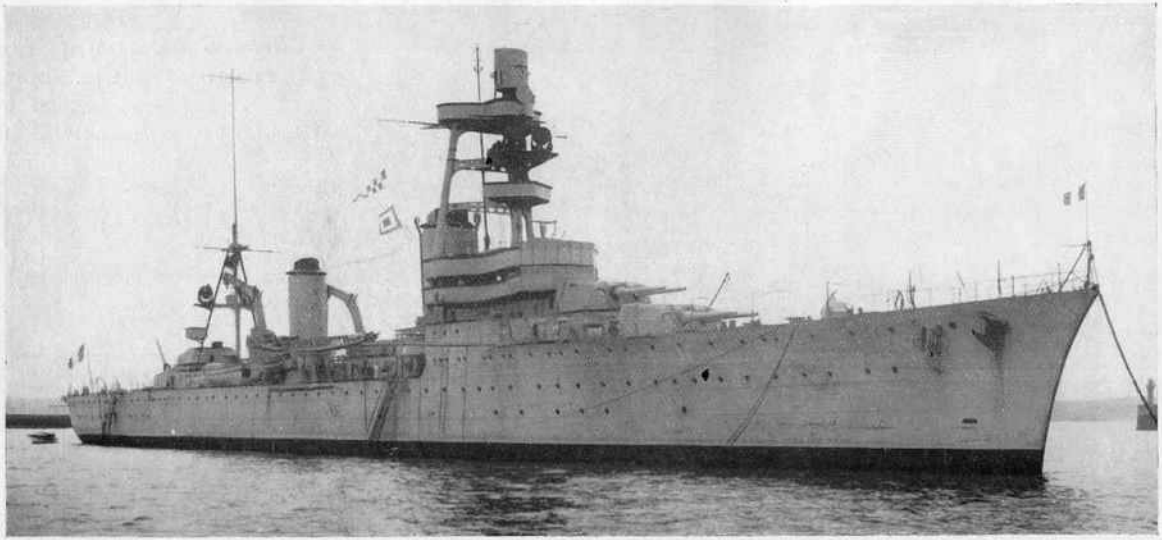


1933 *Photo, Officia*

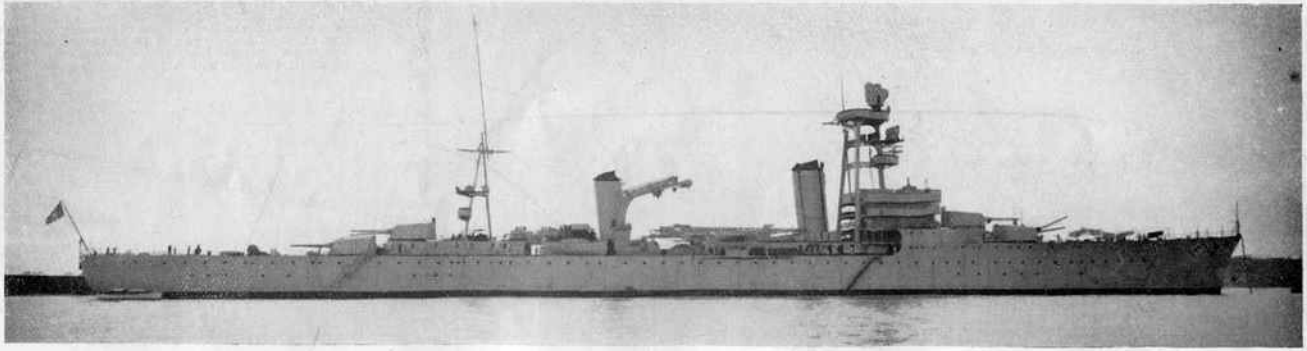


General Notes.—Laid down on March 13th, 1931 at Brest. The design constitutes a distinct departure from the "Tin-clad" vogue, and is to be more along the lines of a modern edition of the armoured cruiser of thirty years ago, being a reply to the Italian *Zara* type. A novel distribution of internal armour is to be introduced giving special anti-aerial and torpedo protection, while the big guns and hoists are to be adequately armoured instead of being mounted in gunhouses made up of thin plating with unarmoured hoists. Speed will undergo some reduction but the ships are not likely to suffer any real loss of military qualities on this account. A new model 8″ gun is to be introduced in this class, firing improved shells and having a greater range than the present model. She is to be completed in 1933.

1933 *Photo, Capt. M. Adam.*



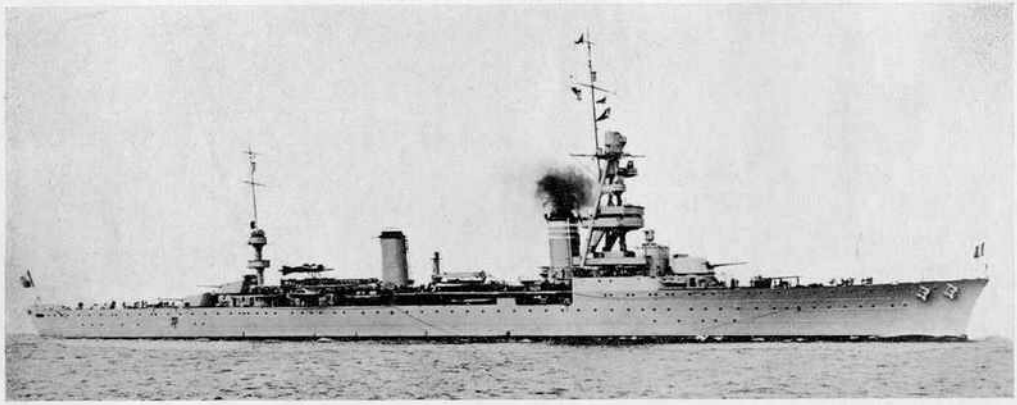
FOCH. 1931, *Official Photo.*



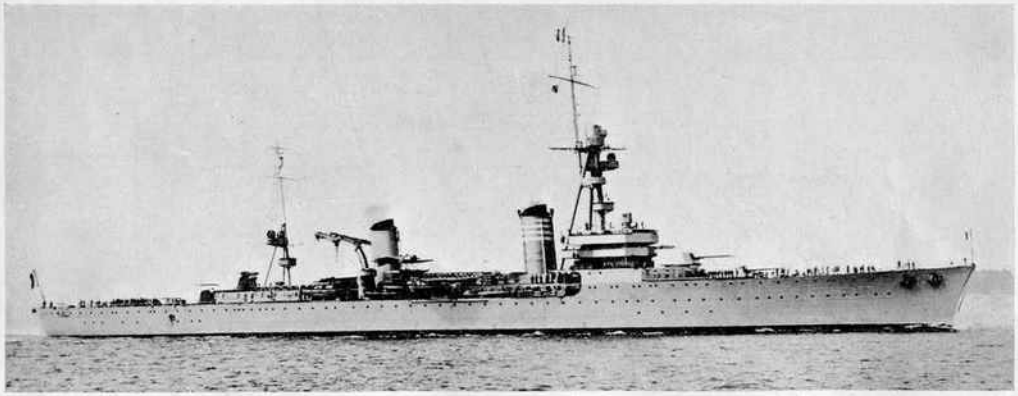
1931, *Official Photo.*

1926 CRUISERS 1929

SUFFREN CLASS—4 SHIPS.



SUFFREN. 1930 *Photo.*



COLBERT. (Note position of catapult, bridgework, cranes, and after mast.) 1930 *Photo.*

Dupleix similar, but with s.l. on foremast mounted on a single platform.

SUFFREN (May 3rd, 1927). **COLBERT** (April 20th, 1928).
FOCH (April 24th, 1929). **DUPLEIX** (October 9th, 1930).

Standard Displacement, 9,938 tons. Complement, 605.

Length (*p.p.*), 607 feet, (*o.a.*), 617 feet. Beam, 65 feet. Draught, 20 feet.

Guns:
- 8—8″ (**Dir. Con.**)
- 8—3·5″ AA. (3″ in *Suffren*)
- 8—37 m/m Q.F.

Torpedo Tubes:
- 6—21″ (in triples above water)
- 2 Catapults.
- 3 Seaplanes.

Armour:
Has a patch of thin armour over engine and boiler spaces, with 17 W.T. bulkheads carried right up to upper deck. Coal bunkers arranged to give extra protection. Fitted with external bulges.

Machinery: 3 Rateau geared turbines. Boilers: 9 Guyot (8 main and 1 auxiliary). Designed: S.H.P. 90,000=33 kts. 3 screws. Fuel: oil, 1800 tons. Coal: tons. Auxiliary equipment driven through 3 Diesel (Renault type) with dynamos. Radius: 5000 miles at 15 kts.

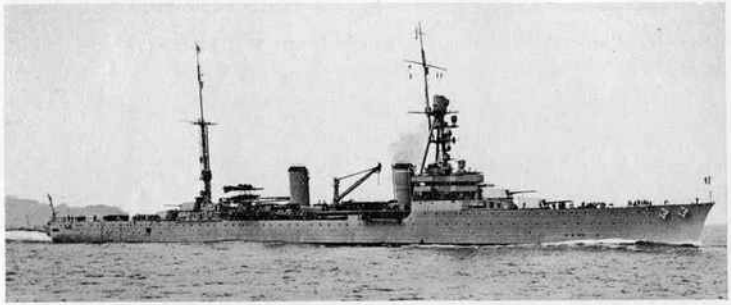
Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*
Suffren	Brest	A. & C. de	May, 1926	Dec., 1928	98,300=33·7
Colbert	,,	Bretagne	June, 1927	Sept., 1929	101,800=33·9
Foch	,,	in all	June, 1928	1930	119,000—34.1
Dupleix	,,		Oct., 1929	1931	

Are able to steam at 29 knots with half-power.

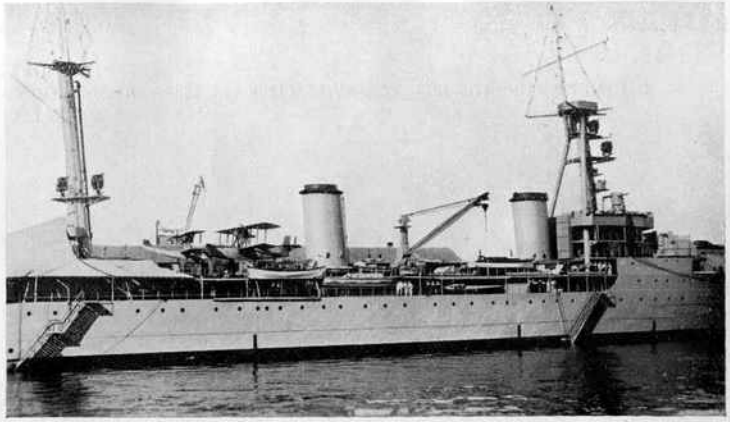
Cost: *Suffren*, 144 million. *Colbert*, 147 million francs.
Foch, 156 million. *Dupleix*, 167 million francs.

General Notes.—Are modified editions of *Tourville* class in which about two knots have been sacrificed in order to gain better protection. They differ in detail as regards appearance, *Dupleix* being similar to *Colbert*. At full speed *Foch* proved very successful, (compare with *Lamotte-Picquet*) due to modified bow and stern lines.

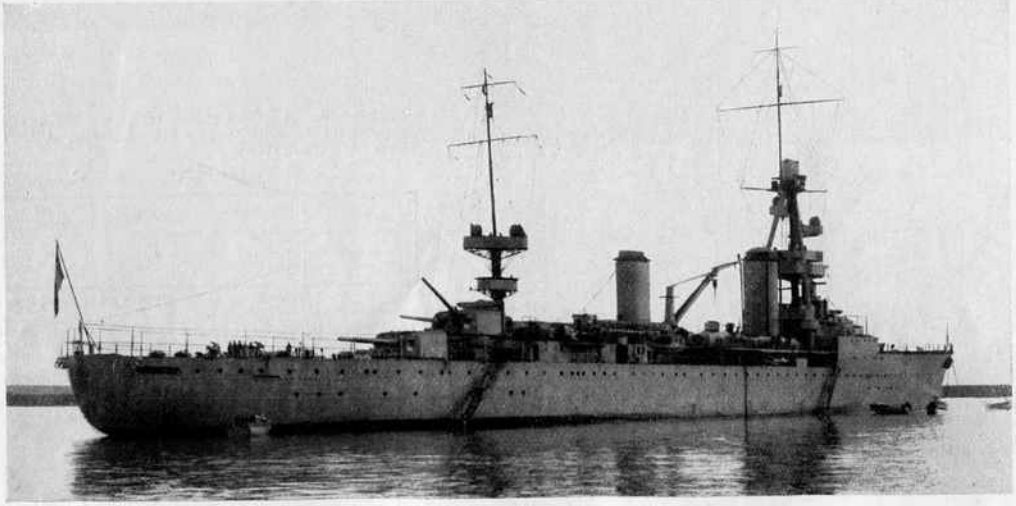
DUPLEIX. 1932 *Photo, Capt. M. Adam.*



DUQUESNE. 1930 *Photo.*



TOURVILLE. *Photo added* 1930, *W. W. Stewart, Esq.*

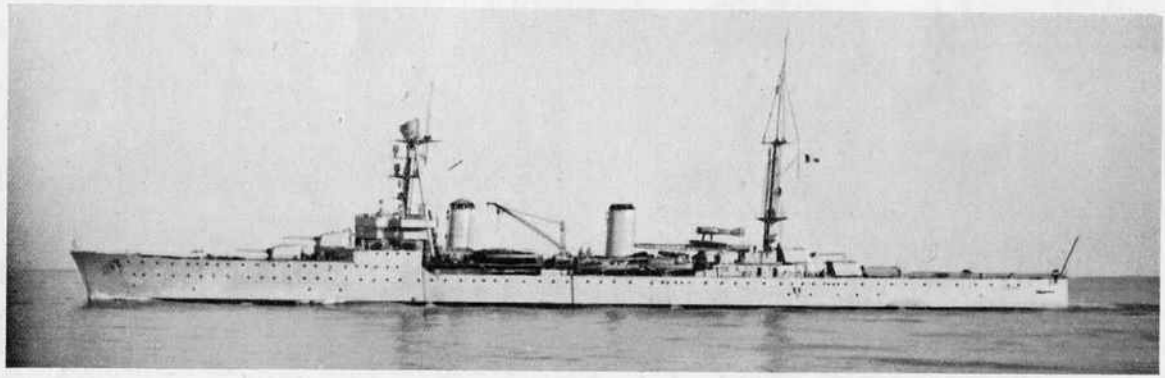


SUFFREN. 1930 *Photo, courtesy of the Ministry of Marine.*

1924 CRUISERS.

(Tourville Classes—2 Ships.)

DUQUESNE (Dec. 17th, 1925), **TOURVILLE** (Aug. 24th, 1926). Standard displacement, 10,000 tons (11,900 tons deep load). Complement, 605. Length (*p.p.*), 607 feet; (*o.a.*), 626½; Beam, 63 feet. Draught, 20⅔ feet.

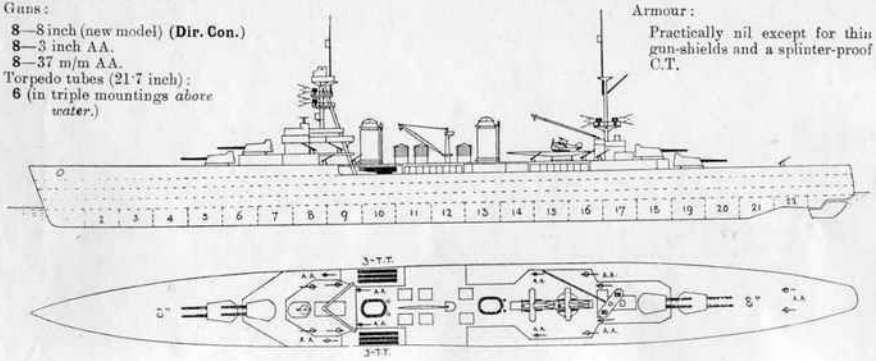


Duquesne

1932 *Photo, Mons. H. le Masson.*

Guns:

8—8 inch (new model) **(Dir. Con.)**
8—3 inch AA.
8—37 m/m AA.
Torpedo tubes (21·7 inch):
6 (in triple mountings *above water*.)



Armour:

Practically nil except for thin gun-shields and a splinter-proof C.T.

Machinery: 4 Rateau geared turbines. Boilers: 9 Guyot (8 main and 1 auxiliary). Designed S.H.P., 120,000 = 34·5 kts. 4 screws. Oil: 1800 tons. Radius: 5,000 miles at 15 kts.; 700 at full speed.

Duquesne and *Tourville* equipped with 2 scouting seaplanes and a launching catapult.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*
Tourville	Lorient	A. & C. de Bretagne	14 April, 1925	1928	130,000 = 36.15
Duquesne	Brest		30 Oct., 1924	1928	135,000 = 35.3

General Note.—Above ships are practically enlarged copies of *Duguay-Trouin* design, with an improved form of hull and heavier armament.

Engineering Notes.—Boiler and engine rooms are arranged alternately, and not in two separate groups, as suggested in plans appearing elsewhere. *Tourville's* trial speed of over 36 kts. was obtained while running on normal Displacement. Auxiliaries driven through 3 Diesels (Renault Type) with dynamo.

La GALISSONNIÈRE (Brest) (Nov. 17, '33). *JEAN de VIENNE* (L'Orient).

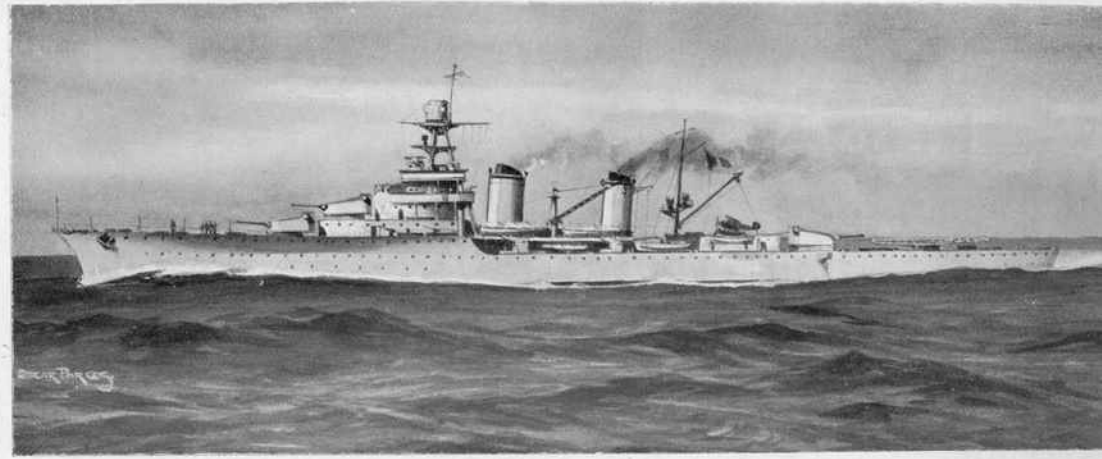
GLOIRE (Ch. de la Gironde). *MARSEILLAISE* (Ch. de la Loire). *MONTCALM* (F. et. Ch. de la Mediterranean). *GEORGES LEYGUES* (*ex. Chateaurenault*) (Ch. de Ste Nazaire).

Displacement, 7,729 tons.

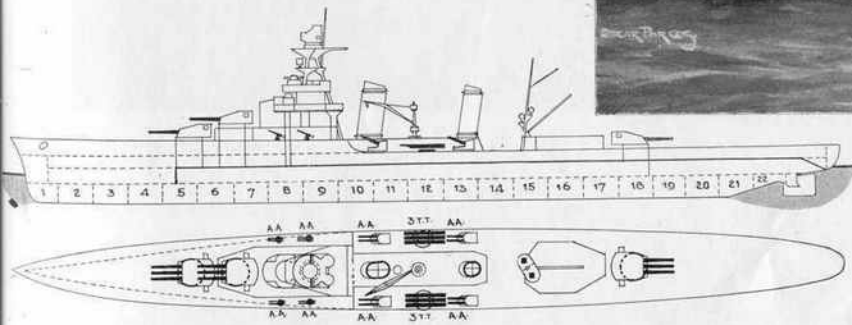
Length: 590 ft. (180 *m.*) Beam: 57·4 ft. (17·5 *m.*) Draught: 16·4 ft. (5 *m.*)

Guns:
9—6·1 inch (152 mm.)
8—3·5 inch AA. (90 mm.)
Tubes:
4—21·7 inch (550 mm.)
Aircraft:
2

Armour (unofficial):
4″—3″ Belt.
2″ Deck
5½″ Turret faces.



1933 *Drawing, Oscar Parkes*



Machinery: Turbines. 84,000 H.P. = 31 kts.

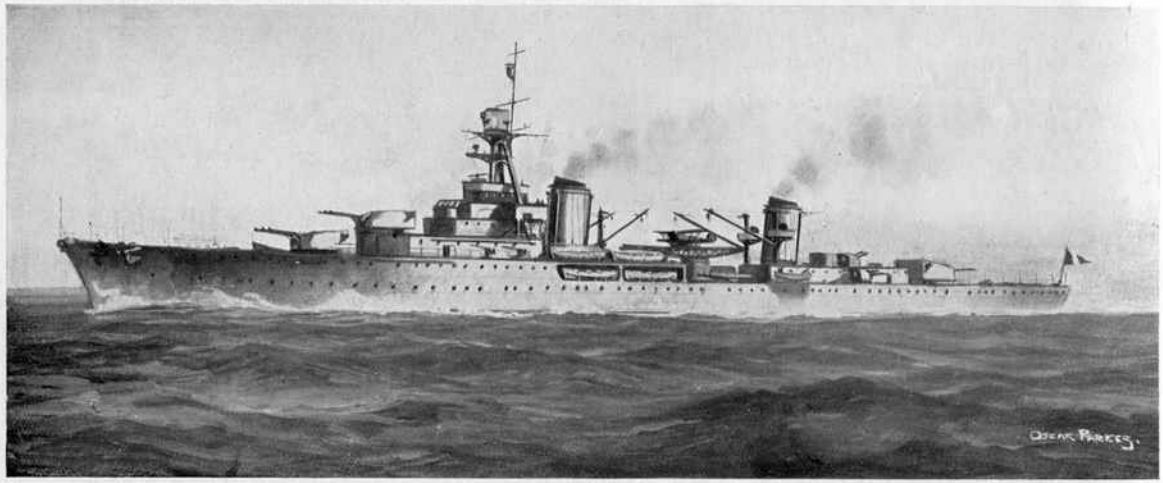
General Notes.—The delay in the construction of these ships is in part due to modifications having been introduced into the design, which is based on that of the *Emile Bertin* with additional protection which is said to be capable of resisting 6″ gun-fire. Details as to the catapult and crane arrangements are liable to alteration, otherwise the ships will be substantially as shown. A feature of the design is the long quarter-deck—possibly to allow a clear area for stowing a plane landed aft from a Hein mat, or else the catapult may be mounted there. Planes may be stowed on the after-shelter deck and at the base of the mainmast. The bow flare is angled and not curved. It is more than likely that the four later ships will differ from *La Galissonnière* and *Jean de Vienne* in minor details.

The first two belong to the 1930–31 Programme: the other four to the 1931–32 Programme. Ordered Apr. '33.

1931 MINELAYING CRUISER.

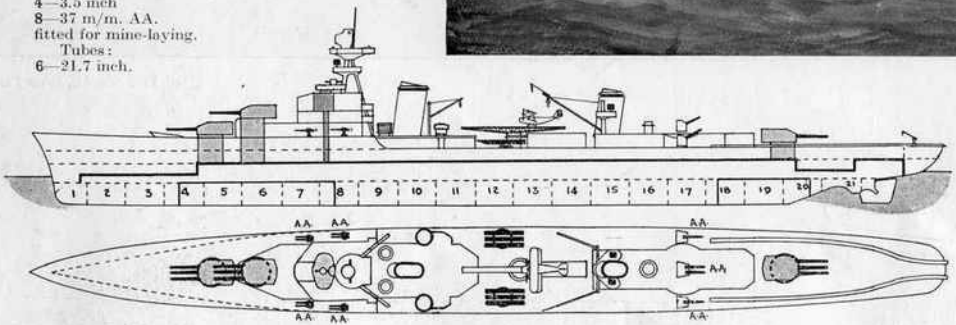
EMILE BERTIN, (Penhoët, St. Nazaire.) (May, 9, 1933.)

Displacement: 5,886 Tons. Complement ———. Length: 548 ft., (167 m.) Beam: 52·4 ft., (16 m.) Draught: 16·4 ft., (5 m.)



1933. *Drawing, Oscar Parkes.*

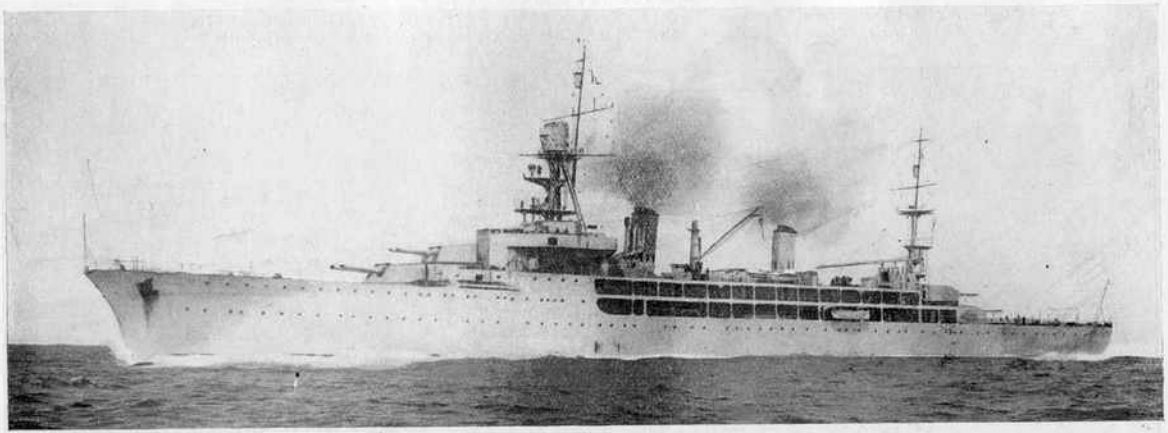
Guns:
9—6 inch.
4—3.5 inch
8—37 m/m. AA.
fitted for mine-laying.
Tubes:
6—21.7 inch.



Machinery: Turbines. S.H.P. 102,000 34 kts. Fuel: Boilers.

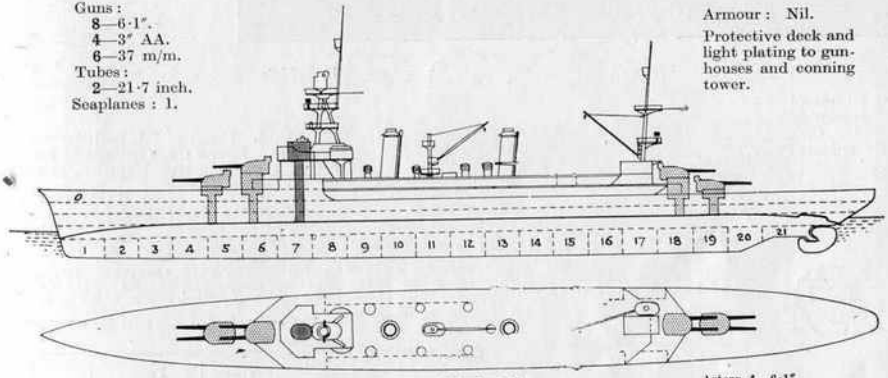
Notes.—Authorised under the 1930 Programme. Laid down 1931. To be completed in 1934. The triple mounting makes its first appearance in the French Navy in this ship. She is a development of the *Pluton* but the cruiser characteristics are not so much subordinated to those of the mine-layer.

JEANNE D'ARC (Penhoët, St. Nazaire.) (Feb. 14th, 1930.)
Standard Displacement, 6,496 tons. Dimensions, 525 × 57½ × 17¾ feet.
Complement: 505



1931 *Official Photo.*

Guns:
8—6·1″.
4—3″ AA.
6—37 m/m.
Tubes:
2—21·7 inch.
Seaplanes: 1.



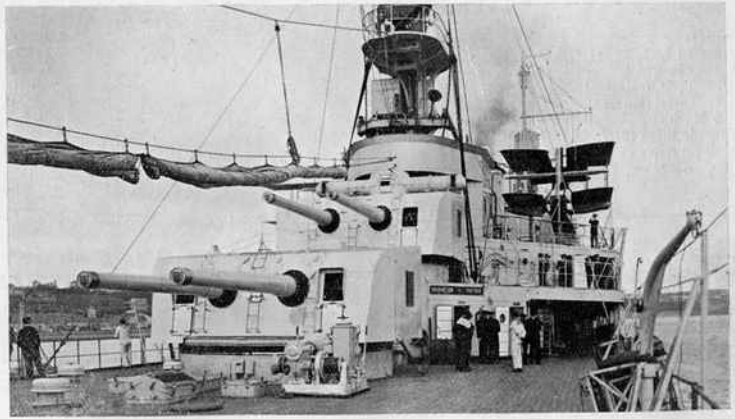
Armour: Nil.
Protective deck and light plating to gun-houses and conning tower.

Ahead 4—6·1″. Broadside 8—6·1″. Astern 4—6·1″.

Machinery: Penhoët, Parsons turbines. 4 screws. Designed H.P. 32,500=25·5 kts. Oil: 14,000. Radius, 5,000 miles at cruising speed (14–15 kts.). Boilers: 4 Penhoët.

General Notes.—Designed to carry two catapults as shown in plan, but these have been discarded and she will now have seaplane stowage amidships only. Will accommodate 156 midshipmen and cadets and 20 instructional officers, in addition to ordinary complement. Authorised under 1927 Programme and laid down at Penhoët Yard, St. Nazaire in 1928. Completed in 1931.

Trials:—3 hours' full power: 39,000 H.P.=27·84 kts.



Quarter Deck.

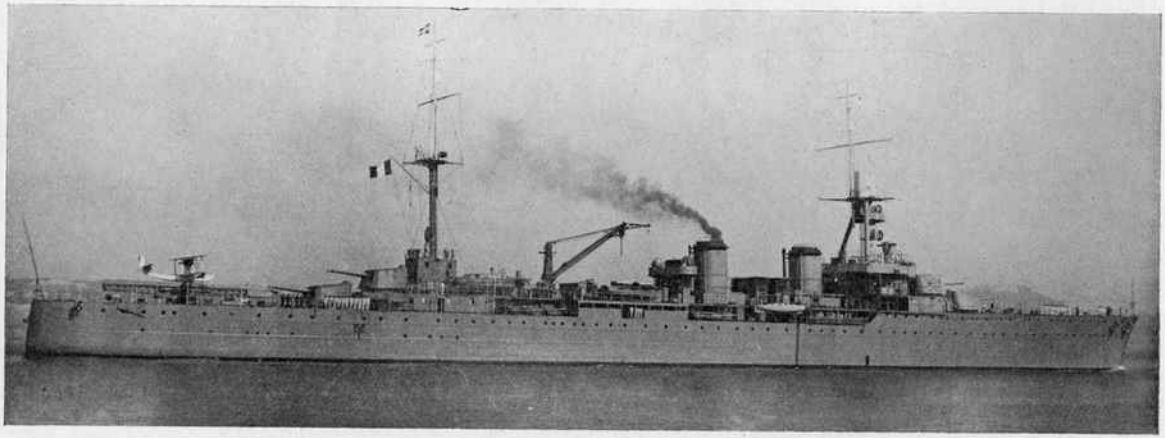
1932 *Photo, Mon. H. le Masson.*

1922 CRUISERS.

(Duguay-Trouin Class—3 Ships.)

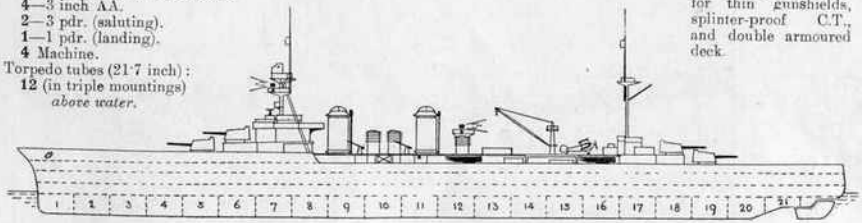
DUGUAY-TROUIN (14th Aug., 1923), **LAMOTTE-PICQUET** (21st March, 1924), **PRIMAUGUET** (21st May, 1924).

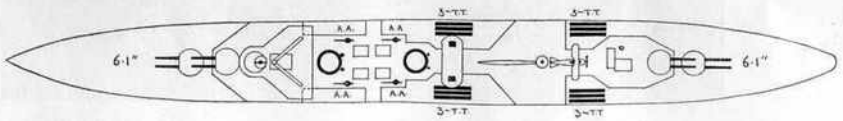
Standard displacement, 7,249 tons. Normal displacement, 7,880 tons. (*Full load*, 9,350.) Complement, 577.
Length (*p.p.*) 575 feet, (*o.a.*) 601 feet. Beam, 56¼ feet. Draught, 17¼ feet *mean*; 20 feet *maximum* at full load.



Primauguet. 1930 *Photo.*

uns:
8—6·1 inch, 55 cal. **(Dir. Con.)**
4—3 inch AA.
2—3 pdr. (saluting).
1—1 pdr. (landing).
4 Machine.
Torpedo tubes (21·7 inch):
12 (in triple mountings) *above water.*





Armour:
Practically nil, except for thin gunshields, splinter-proof C.T., and double armoured deck.

Machinery: 4 Parsons geared turbines. Boilers: 8 Guyot. Designed S.H.P. 100,000 = 34 kts. 4 screws. Oil: 500 tons *normal*, 1500 tons *maximum*. Radius: 880 miles at 34 kts.; 1290 at 30; 3000 at 20; 4500 at 15. Each vessel carries 2 scouting type seaplanes, and a launching catapult (abaft after turret). Depth charges carried.

Gunnery Notes.—6.1 inch guns are a new model with ballistic powers superior to old marks of 7.6 inch. Range reported to be 23,000 metres, elevation 35°. Reason for adoption of this calibre is said to have been its uniformity with Army type 6.1 inch, simplifying munition supply, more particularly of gas and incendiary shells. Gunhouses are reported to be gas-tight, and to have a special method of ventilation by forced draught.

Engineering Notes.—Trial results tabulated are averages of 6 hours with full complement of fuel and stores. *Maximum* speed for 1 hour, 34.5 kts. All three ships maintained 30 kts. for 24 hours' continuous steaming at half power with full load, and have proved very economical. Excellent sea-keeping qualities. Heating surface, 13,209 sq. feet.

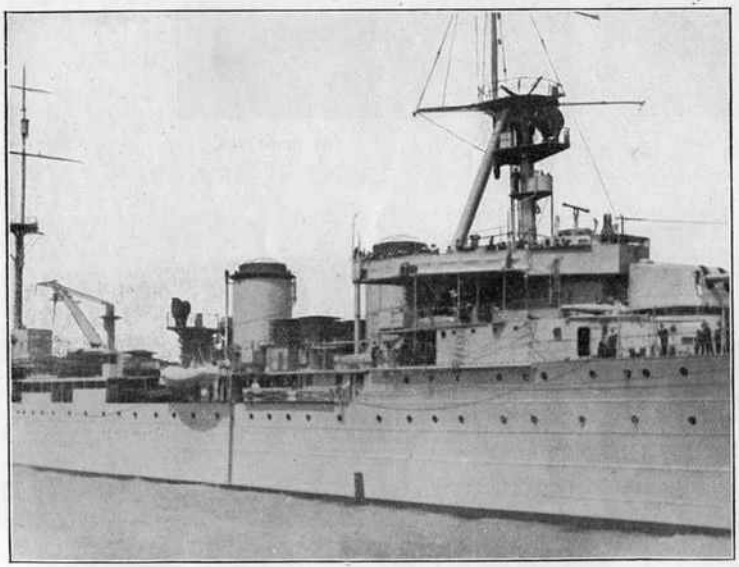
Torpedo Notes.—24 torpedoes carried (12 in tubes, 12 in magazine). In addition, 4—17.7 inch torpedoes are carried for picket boats.

Name.	*Builder.*	*Machinery.*	*Laid down.*	*Completed.*	*Trials. (6 hours)*	
Duguay-Trouin	Brest	F. & C. de la Méd.	4 Aug., '22	Aug., 1925	116,235 = 33·6	
Primauguet	Brest	A. & C. de la Loire	10 Aug., '23	Nov., 1925	116,849 = 33·06	
Lamotte-Picquet	Lorient	C. & A. de St. Nazaire (Penhoët).	17 Jan., '23	Dec., 1925	115,100 = 33·04	

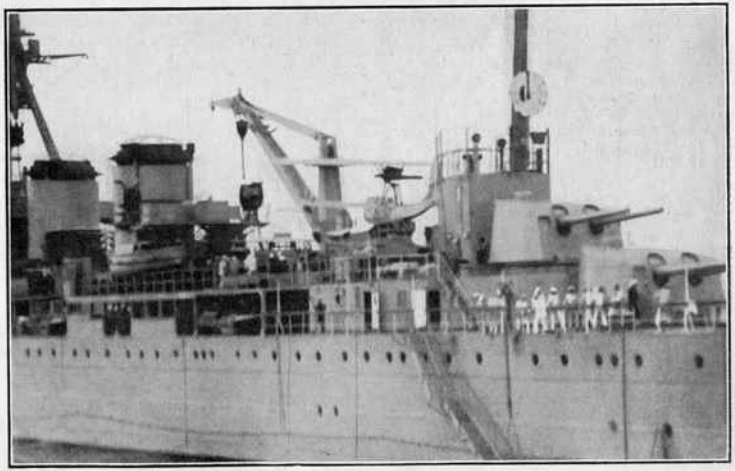
General Notes.—Completion dates given above do not represent actual passing into service, but merely dates of beginning trials. These ships have shown excellent sea-going qualities.

DUGUAY-TROUIN. 1927 *Official Photo.*

LAMOTTE PICQUET. 1930 *Photo.*



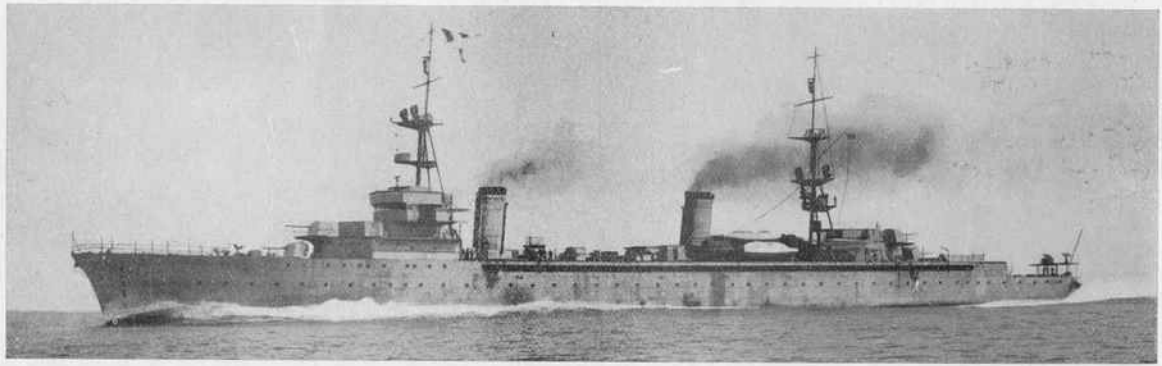
DUGUAY-TROUIN 1927 *Photo "Fighting Ships."*



DUGUAY-TROUIN. 1928 *Photo, W. A. Fuller Esq.*

1928 MINELAYING CRUISER.

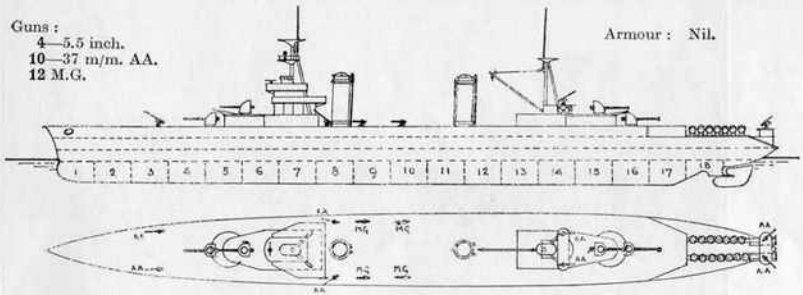
PLUTON (April 10th, 1929).
Displacement, 4,773 tons. Complement, 406. Length, 472½ feet. Beam, 51 feet.
Draught, 17 feet.



PLUTON. 1931 *Official Photo.*

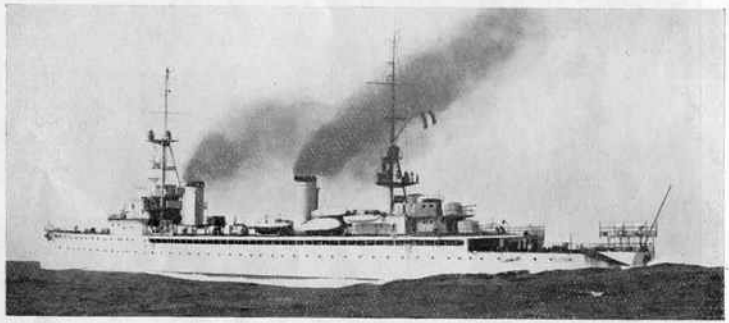
Guns :
4—5.5 inch.
10—37 m/m. AA.
12 M.G.

Armour : Nil.

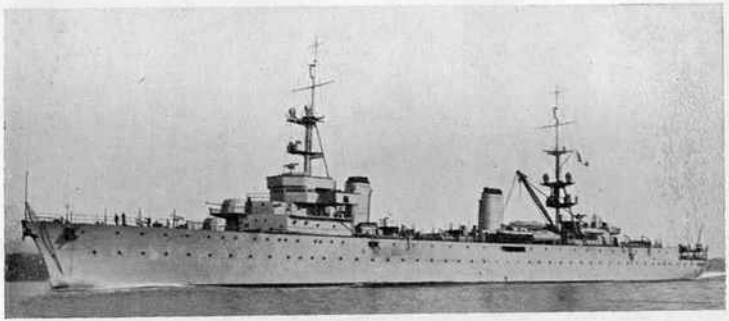


Machinery : 2 Breguet geared turbines. S.H.P. 57,000=30 kts. Oil=1,200 tons. Boilers : 4 small tube.

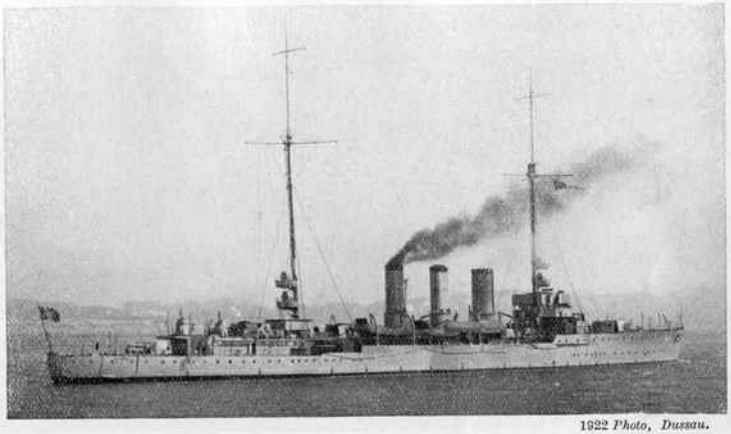
Note.—Authorised under 1925 Programme, and laid down at Lorient Dockyard in April, 1928, completed April, 1931.
Trials: H.P., 56,000=30·6 kts. Top speed 31·6 kts.



Mine deck plated in 1933. 1932 *Photo, Official.*



PLUTON (showing mine-deck plated in). 1933 *Photo.*



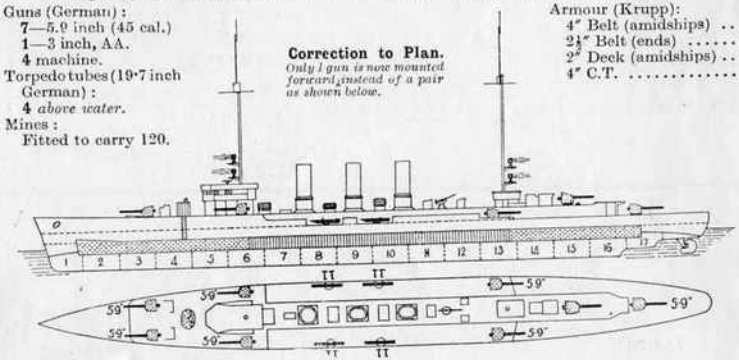
1922 *Photo, Dussau.*

STRASBOURG (ex-German *Regensburg*, April, 1914).
Standard displacement, 4,723 tons (5,511 *full load*). Complement, 420.
Length (*w.l.*), 456 feet. Beam, 45 feet. Draught, 16 feet *mean*, 17 feet *max.*

Guns (German):
7—5.9 inch (45 cal.)
1—3 inch, AA.
4 machine.
Torpedo tubes (19·7 inch German):
4 *above water.*
Mines:
Fitted to carry 120.

Correction to Plan.
Only 1 gun is now mounted forward instead of a pair as shown below.

Armour (Krupp):
4″ Belt (amidships) ....
2½″ Belt (ends) .....
2″ Deck (amidships) ....
4″ C.T. .....



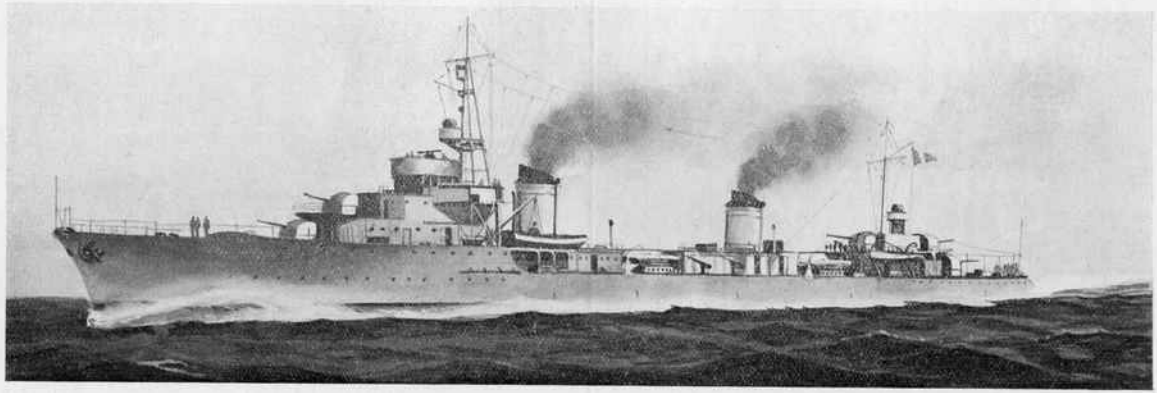
Machinery: German "Marine type" turbines. 4 screws. Boilers: 14 Schulz-Thornycroft: Designed S.H.P. 32,000 = 27.25 kts. Coal: *normal*, 470 tons; *maximum*, 1170 tons. Oil: 430 tons. Endurance: 4466 miles at 11 kts.: 918 miles at 25.5 kts.

Notes.—Begun under German 1912 Programme as *Ersatz Irene*, by Weser Co., Bremen. Completed late in 1914. Surrendered at Cherbourg, June, 1920. Armaments mounted in this ship, when in German Navy, were (*a*) 12—4·1 inch, 1914-15, (*b*) 2—5·9 inch, 8—4·1 inch, about 1915-17, (*c*) 7—5·9 inch, at end of war. Has done 26 kts. on trials, after refit (March, 1925) but is only good for about 22-23 kts. at sea now. Now in reserve.

DESTROYERS.

7 Improved Aigle Class.

1930 Programme.



1932 *Illustration.*

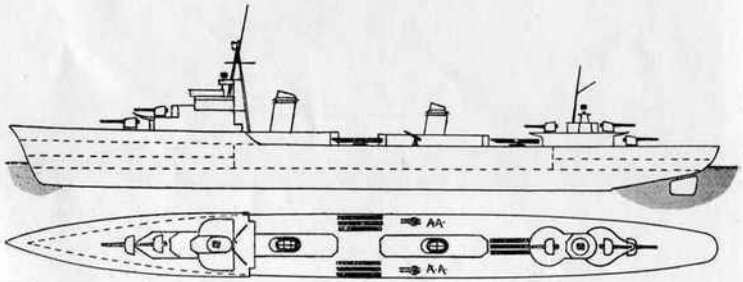
Le Fantasque	Lorient.	These ships are much behindhand and will average 4 years from placing of contracts to completion date.
L'Audacieux		
Le Malin	La Seyne. (Aug. 17, 1933).	
Le Terrible	C.N.F. Blainville	
Le Triomphant	Ch. de France (Dunkerque) (Dec. 1933).	
L'Indomptable	La Seyne. (Nov. 1933).	
Mogador	Lorient. (1932 programme).	

Displacement: 2,569 tons.
Dimensions: 410 × 39 × 30 ft. (125·4 × 11·9 × 9 m).
S.H.P. 74,000 = 37 kts.
Guns: 5—5·5 inch, 4—37 m/m, 4 D.C. throwers.
Tubes: 9—21·7 inch
Machinery: 2 sets geared turbines.
Rollers: 4 small tube.
Complement: 10/200.

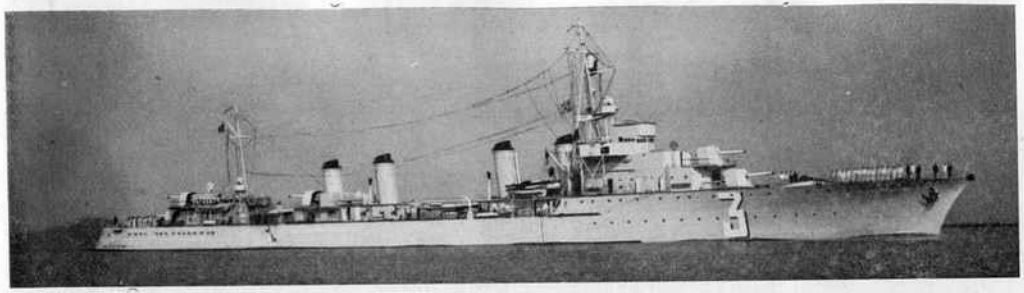
1 Experimental Type.

Le Hardi — 1931 Programme.

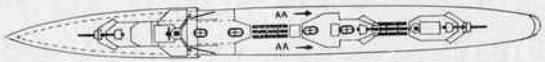
No official details available, but is reported as being designed along the lines of recent Italian destroyers with four 5·1" guns in twin mounts on a displacement of 1,600 tons.



Machinery Note.—Rateau-Bretagne turbines fitted in *Le Fantasque* and *Le Terrible*; Parsons in *Le Malin* and *L'Indomptable*.



VAUBAN. 1931 *Photo, M. Bar.*



BISON. 1931 *Photo, Capt. de C. M. Adam.*

MILAN, VAUTOUR AND CASSARD CLASS.

Average speed at normal displacement and designed H.P.

Guepard 35·9.
Valmy 37.
Verdun 36·7.
Gerfaut 40·5.
Bison 36·5.

MAILLÉ BRÉZÉ. 1933 *Photo, Capt. de C. M. Adam.*

6 GUÉPARD and 12 AIGLE Classes:

1925 Programme.

	Builders.	*Begun.*	*Launched.*	*Compl.*	*Top Speed.*
Bison	Lorient	Feb. '27	29/10/28	1929	=40·6
Guépard			19/4/28	1929	69,100=38·4
Lion	Ch. France	Apl. '27	5/8/29	1930	=40·4

1926 Programme.

Vauban	Ch. France	'27	1/2/29		=40·2
Valmy	Penhoët	'27	19/5/29		69,300=39·8
Verdun	Ch. Loire	'27	4/7/28		72,400=40·1

Displacement: 2,436 tons. About 2,900 tons full load.
Dimensions: 433·3×37·6×11·7 feet.
Guns:—5—5·5." 4—37 m/m. 4—Dc. Throwers. Tubes, 6—21·7".
S.H.P. 64,000=36 kts. Oil: 500-650 tons. Radius: 3,000 miles at 18 kts.
Turbines: Parsons in *Valmy, Verdun, Guépard* and *Bison*. Zoelly-Fives-Lille in *Vauban* and *Lion*.

1927 Programme.

Aigle	Ch. France	'29	19/2/31	1931	
Albatros	A. C. Loire	'29	28/6/30	1931	87,000=41·9
Epervier	Lorient	6/30	14/8/31	1932	=42·60
Gerfaut	Ch. Bretagne	'29	14/6/30	1931	=42·78
Milan	Lorient	6/30	14/10/31	1932	83,000=42·47
Vautour	F. C. Med. Havre	'29	26/8/30	1932	80,000=40·2

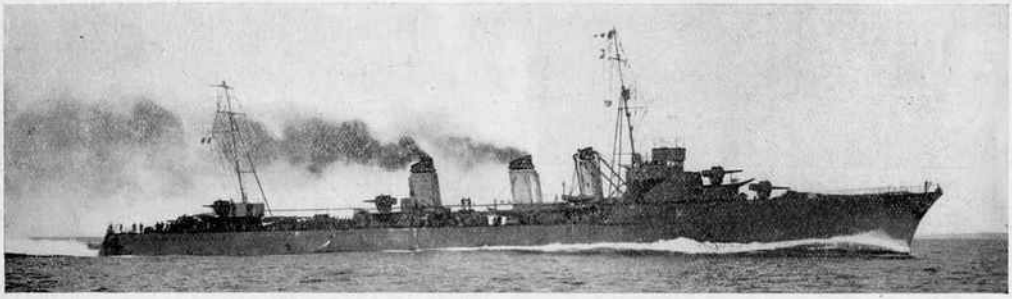
Turbines: Parsons in *Albatross, Vautour* and *Milan*. Rateau-Bretagne in *Gerfaut* and *Epervier*. Zoelly-Fives-Lille in *Aigle*.

1928—29 Programme.

Cassard	Ch. Bretagne	11/30	8/11/31	=42·9
Le Chevalier Paul	La Seyne	2/31	21/3/32	
Maillé Brezé	Penhoët	10/30	9/11/31	=42·0
Kersaint	Ch. Loire	9/30	14/11/31	
Tartu	Ch. Loire	/30	7/12/31	
Vauquelin	Ch. France	3/30	29/9/32	

Displacement: 2,441 tons. Dimensions: 423·5×38·6×12·7 feet.
S.H.P. 70,000=36 kts. (74,000 in *Milan* and *Epervier*).
Oil: 650 tons. Radius: 2,500–3,000 miles at 18 kts.

ARMAMENT in *Aigle* and *Cassard* groups.
Guns: 5—5·5 inch, 4—37 m/m, 4 D.C. Throwers.
Tubes: 7—21·7 inch (6 in *Aigle, Albatross, Epervier, Gerfaut*).
Machinery: 2 sets geared turbines. Parsons in *Kersaint, Tartu, M. Brézé* and *Ch. Paul*. Zoelly-Fives-Lille in *Vauquelin*. Rateau-Bretagne in *Cassard*.
Boilers: 4 small tube.



TIGRE. 1931 *Photo, R. Perkins.*

Note.—Classified on a tonnage basis these ships would rank as cruisers being above 2,000 tons **standard displacement.** They are employed in divisions and not as flotilla leaders.

1922 Programme

		Begun.	*Launched.*	*Compl.*	*Trials.*
Jaguar	Lorient		6/11/23	1926	52,000=34·7
Panthère	Dockyard		28/10/24	1926	=35·5
Léopard ..	Ch. de Loire		29/9/24	1927	
Lynx ..	St. Nazaire		25/2/25	1927	=35·5
Chacal ..	Penhoët		27/9/24	1926	52,000=36·1
Tigre ..	Ch. de Bretagne Nantes.		2/8/24	1926	58,000=36·7

Displacement: 2,126 tons; 2,700 tons full load.

Dimensions: 392¼ (*p.p.*), 416 (*o.a.*)×36×11·1 feet. Complement: 204.

Guns: 5—5·1 inch.
8—M.G. AA.
4—D.C. Throwers.

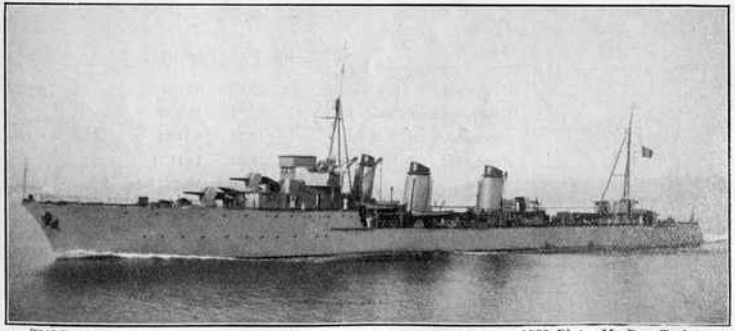
Tubes: 6—21·7 inch.

Oil: 250/540 tons.
Radius: 3,500 miles at 15 kts.
2,500 „ „ 18 „
900 „ „ full speed.

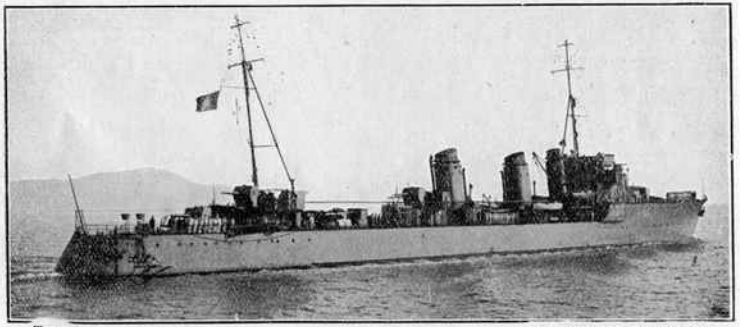
S.H.P. 50,000=35·5 kts. Breguet-Loire turbines (*Léopard* and *Lynx*). Rateau-Bretagne in other four. 5 small tube Du Temple boilers.

Average speed at normal displacement and H.P.

Jaguar 34·2	Chacal 34·7
Panthère 35·3	Tigre 35·9
Léopard 34·9	Lynx 34·5

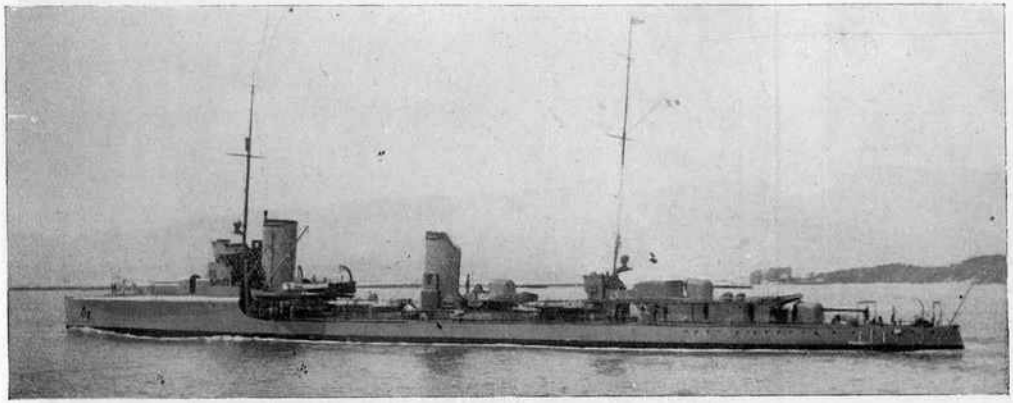


TIGRE. 1926 *Photo, M. Bar, Toulon.*



TIGRE. 1926 *Photo, M. Bar, Toulon.*

1 ex-German Boat. ("1916 Design.")



AMIRAL SÉNÈS

Photo added, 1931.

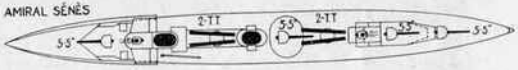
1 *Schichau, Danzig*: **Amiral Senès** (ex-German *S 113*, launched 1917, completed May, 1918). 1525 tons*. Dimensions: 334½ × 36 × 13 feet draught aft. Guns: 4—5·9 inch, 2—37 mm. AA. Torpedo tubes: 4—21·7 inch, in two twin deck mountings. Machinery: Turbine. Boilers: 4 Marine type (by Schichau). Designed S.H.P. 44,000=34 kts. (*trial* gave 36·9 kts.) 2 screws. Oil fuel: 210 tons *normal*, 720 tons *max.*=2500 miles at 20 kts.

* *Standard* displacement 1525 tons; *normal* is 2100 tons.

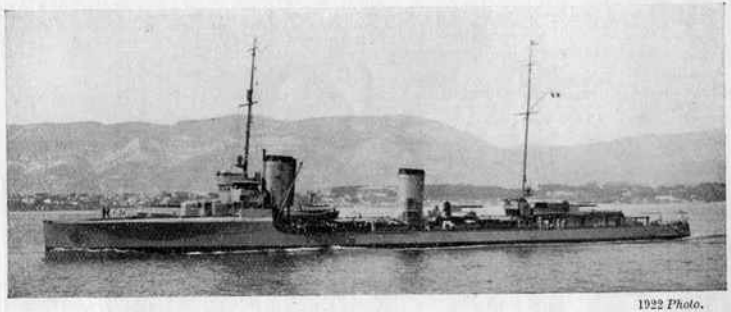
Gunnery Notes.—5·9 inch have large degree of elevation and can be used as AA. guns. German directors, fire controls, R.F. and electric transmitters, etc., stripped before surrender.

Torpedo Notes.—Tubes, 32 feet long, electrically operated, and with special electric motors for loading. Axes diverge 15°.

General Notes.—Originally a unit of the German "1916 Design" Class (*S 113—B 124*). A sister boat (*V 116*) now Italian *Premuda*. The class represents the largest and most powerful Destroyer type extant, but their sea performance as first completed was very bad indeed. Ran trials during spring of 1918, when engines and armament proved too powerful and heavy for the hull; they were sent back to the yards for alterations. The Germans are said to have lengthened these boats by about 11½ feet at bows in an attempt to improve stability. They never joined German Flotillas during the war. French reports also say they never got beyond 30 kts. on trials. Hull strengthening and minor modifications are reported to have considerably improved the qualities of *Amiral Sénès*, and she is now good for 32 kts.

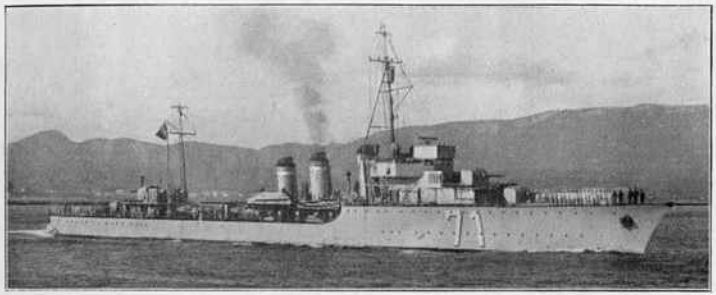


This vessel is rated in the Treaty cruiser category by virtue of her 5.9" armament, but France does not accept this classification.



1922 *Photo.*

14 Adroit Class.



LE MARS. 1929 *Photo, M. Bar, Toulon.*

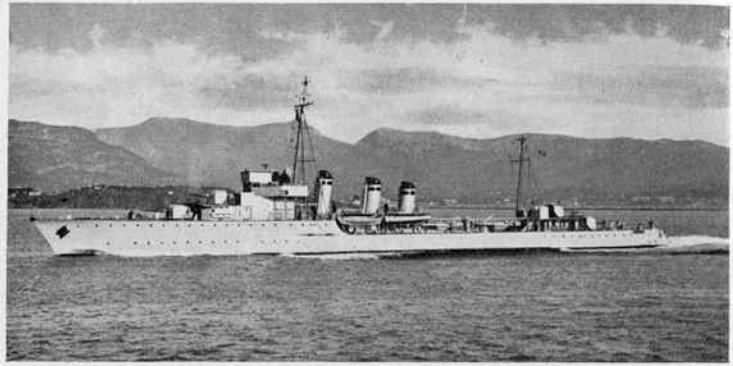
L'Adroit (April 1st, 1927).
Le Fortune (Nov. 15, 1926), ***Le Mars*** (Aug. 28, 1926).
La Palme (June 30th, 1926), ***La Railleuse*** (Sept. 9th, 1926).
L'Alcyon (June 26th, 1926). (Launched at Harfleur and towed to Bordeaux for completion.)
Basque (May 25th, 1929), ***Bordelais*** (May 23rd, 1928), ***Boulonnais*** (June 1st, 1927), ***Brestois*** (May 18th, 1927).
Forbin (July 17th, 1928), ***Foudroyant*** (April 24th, 1929), ***Fougueux*** (Aug. 4th, 1928), ***Frondeur*** (June 20th, 1929).

Displacement: 1378 tons *standard*, 1495 tons *normal* (*about* 1750 *full load*). Dimensions: 330·9 × 32½ × 9½ feet. Complement, 145. Guns: **4**—5·1 inch, **2**—37 m/m. AA. Torpedo tubes: **6**—21·7 inch, in triple deck mountings. 2 sets geared turbines of Zoelly type in *Adroit* and *Alcyon*, Parsons in *Brestois* and *Foudroyant*. Rateau-Bretagne in *Basque*. Designed H.P. 34,000 = 33 kts. Other particulars similar to those of *Simoun* class, but slightly increased boiler power is expected to give improved speed. On trials *Brestois* reached 34·5 kts., *Fougueux* 36.4. 16 Depth Charges carried.

Note.—Ordered under Programmes of 1924 (first six), 1925 (next four), and 1926 (last four). As compared with *Simoun* type, these vessels possess improved stability, higher rate of salvo firing, better aerial defence and lower fuel consumption. 5·1 inch guns said to possess a range of 19,000 yards and can fire eight rounds a minute.

Name	*Builders*	*Engines*	*Begun*	*Completed*
L'Adroit	Ch. de France, Dunkerque	Fives, Lille		1928
L'Alcyon	Ch. de la Gironde	Ch. de la Gironde		1927
Le Fortune	Ch. Navals Français, Blainville	A. & Ch. de la Loire	1925	Sept., 1927
Le Mars	Ch. Navals Français, Blainville	A. & Ch. de la Loire		April, 1927
La Palme	Ch. Dubigeon, Nantes	A. & Ch. de la Loire		1927
La Railleuse	Ch. Dubigeon, Nantes	A. & Ch. de la Loire		1927
Brestois	Ch. Navals Français, Blainville	A. & Ch. de la Loire		
Boulonnais	Ch. Navals Français, Blainville	A. & Ch. de la Loire	Sept.,	
Basque	Ch. de la Seine Maritime	A. & Ch. de Bretagne	1926	1928
Bordelais	Ch. de la Gironde, Bordeaux	Ch. de la Gironde		
Forbin	F. & Ch. de la Med., Havre			
Foudroyant	Dyle & Bacalan, Bordeaux			
Fougueux	A. & Ch. de Bretagne, Nantes		1927	1929
Frondeur	Ch. Navals Français, Blainville	A. & Ch. de la Loire		

12 Simoun Class.



SIMOUN. 1930 *Photo, M. H. le Masson.*

1 *Chantiers de France (Dunkerque):* ***Bourrasque*** (Aug. 5th, 1925).
2 *F. & Ch. de la Méditerranée (Havre):* ***Cyclone*** (Jan. 24th, 1925), ***Mistral*** (June 6th, 1925).
2 *Ch. Navals Français (Blainville).* ***Orage*** (Aug. 30th, 1924), ***Ouragan*** (Dec. 6th, 1924).
2 *A. & Ch. de St.-Nazaire (Penhoët):* ***Simoun*** (June, 3rd, 1924), ***Sirocco*** (October 3rd, 1925).

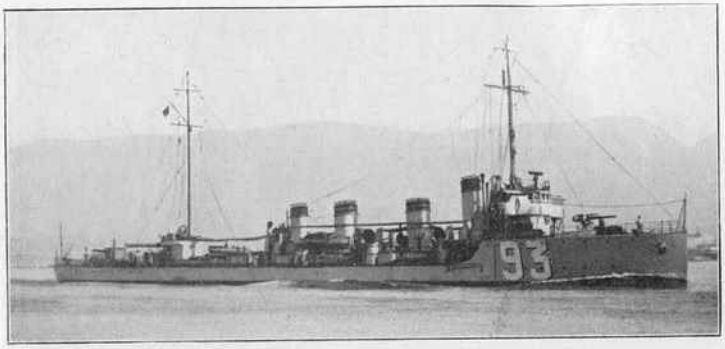
1 *Ch. Dubigeon:* ***Tempête*** (Feb. 21st, 1925).
3 *Ch. de la Gironde:* ***Tramontane*** (Nov. 29th, 1924), ***Typhon*** (May 22nd, 1924), ***Trombe*** (Dec. 29th, 1925).
1 *Dyle & Bacalan:* ***Tornade*** (March 12th, 1925).

Displacement: 1319 tons *standard*, 1458 tons *normal*, 1727 tons *full load*. Dimensions: 326 × 31½ × 9½ ft. Complement, 146. Guns: **4**—5·1 inch, **2**—37 mm. AA. Torpedo tubes: **6**—21.7 inch, in triple deck mountings. Geared turbines of Rateau type in *Orage* and *Ouragan*; Zoelly in *Typhon*, *Tramontane* and *Trombe*; Parsons in other seven boats. H.P. 33,000 = 33 kts. (over 34 reached on trials). Boilers: 3 small tube. 2 screws. Oil: 165 tons *normal*, 350 tons *max*. Radius: 3000 miles at 15 kts.

Notes.—Authorised by Law of 18th August, 1922. 8 hours' trials: *Orage*, 34,000 = 33·8 kts.; *Simoun*, 29,000 = 33·2 kts. (1 hour = 34.3); *Ouragan*, 35,000 = 34.4; *Bourrasque*, = 34.12 (36.4 for one hour); *Mistral* (12 hours), 34 kts. All completed 1926-27. It has been stated that these vessels lose their speed rapidly in a seaway. All have had funnels cut down by about 3 feet to improve stability.

Gunnery Notes.—*Sirocco* has been fitted experimentally with larger gun shields. All are being given bilge keels, increasing displacements as stated above by 20 tons without any reduction of speed.

1 Ganz-Danubius Boat.

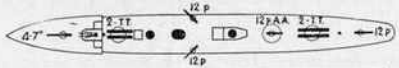


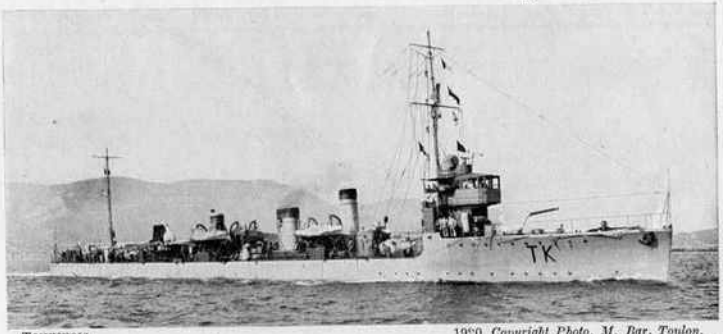
MAT. LEBLANC. 1929 *Photo, M. Bar, Toulon.*

1 *Ganz-Danubius* (Fiume 1915—17) boat: ***Matelot Leblanc*** (ex-Austrian *Dukla*). Dimensions: 275 × 25·7 × 8·3 feet. 836 tons. H.P. 17000 = 32·5 kts. Complement 102. Guns (Austrian): 2—3·9 inch, 4—11 pdr., 2—11 pdr. AA. Torpedo tubes (Austrian): 4—20·5 inch. 6 Yarrow boilers. Added to French Navy, September, 1920. Was unit of Austrian *Tatra* class. Four sister boats incorporated in Italian Navy. (For plan, vide Italian *Cortelazzo* class.)

10 Algérien Class.

(1917 War Programme.)





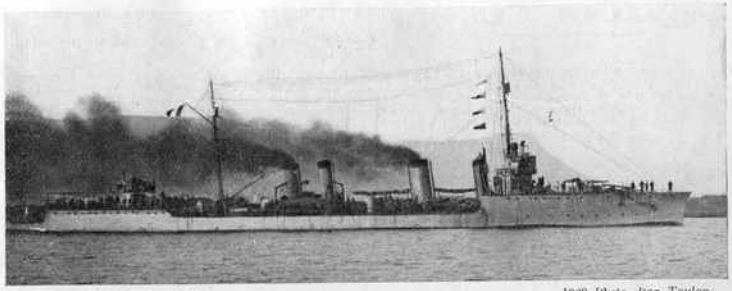
TONKINOIS. 1920 *Copyright Photo, M. Bar, Toulon.*

10 built by Japanese Yards: ***Algérien*** (by Yokosuka D.Y.), ***Arabe*** (by Kure. D.Y.), ***Hova, Kabyle*** (both by Sasebo D.Y.), ***Marocain, Sakalave, Sénégalais*** (all three by Maidzuru D.Y.), ***Somali*** (Kawasaki Co., Kobe), ***Tonkinois, Touareg*** (both by Mitsu Bishi Z K.). All begun March, 1917, launched May and July, 1917, and completed July and September, 1917. Average time of construction 5 months. *Standard* displacement, 601 tons, 830 *full load*. Dimensions: 260 (*p.p.*), 271¼ (*o.a.*) × 27¼ × 7¾ feet. *Normal* draught, 9⅝ feet; *load* draught, 8 feet. Armament: 1—4·7 inch, 4—12 pdr. (one 12 pdr. is AA.), 2 M.G. and 4—18 inch torpedo tubes in two twin deck mountings. Designed H.P. 10,000 = 29 kts.; made about 30 on trials. Machinery: 3 sets 4-cyl. triple expansion. 4 Kansei (Modified Yarrow) boilers. Fuel: 100 tons coal + 120 tons oil = 3000 miles at 15 kts. and 950 miles at *full* speed. Complement, 87.

Note.—These boats are practically replicas of the Japanese *Kaba* class T.B.D. and are often referred to as the "Type Japonais." Radius: 1950 miles at 14 kts., 1200 miles at 22 kts. Made 27 kts. at sea after refit (1925), but now good for only 25-26 kts. at best. *Annamite* and *Bambara*, struck off 1933.

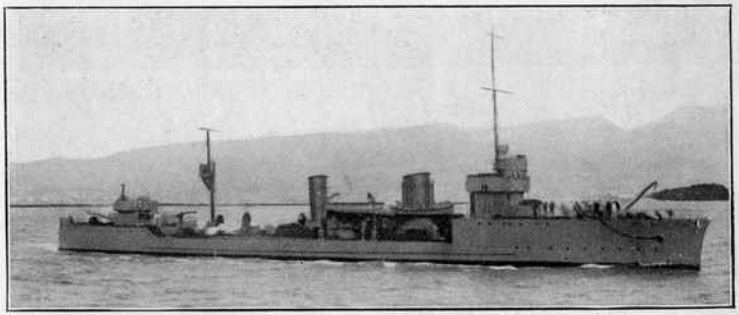
3 Téméraire type:—Purchased Boats.

(Fitted for Minesweeping).



OPINIÂTRE. (*Téméraire* similar). 1920 *Photo, Bar, Toulon.*

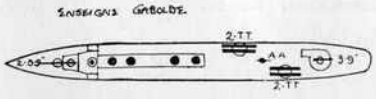
Note.—Now have raised fore funnel, and retain the four funnels after refitting.



INTRÉPIDE. (*Aventurier* similar). 1928 *Photo, M. Dubois.*

3 *Chantiers de Bretagne* (*Nantes*): ***Aventurier*** (ex-*Salta*), ***Intrépide*** (ex-*Rioja*), and ***Téméraire*** (ex-*Mendoza*) (all 1911). *Standard* displacement: 915 tons; *full load*, 1180 tons. Dimensions: 284½ × 28½ × 8⅝ feet *normal* draught. *Full load* draught, 10½ feet. Armament (Schneider-Canet): 4—3·9 inch, (*Téméraire* 1 — 3 pdr). 4 18 inch tubes. Designed H.P. 18,000 = 32 kts. (light). First pair now develop 24,00 + I.H.P. = 25 kts. at full load; *Téméraire* 12,600 = 21·5 kts. Machinery Rateau-Bretagne turbines. *Intrépide* = 3 Schulz-Thornycroft boilers. *Aventurier* = 2 German, 1 Guyot du Temple. *Téméraire* = 1 Du Temple + 3 Guyot du Temple (coal), 1 Normand (oil). Fuel capacity: 240 tons coal + 75 oil, in *Téméraire*; 280 tons oil in *Aventurier* and *Intrépide*. Radii of action: 3,000 miles at 15 kts.

Note.—Built for Argentine Navy and purchased by France immediately before outbreak of war. Refitted 1924-27 and *Aventurier* and *Intrépide* reboilered with boilers out of German Destroyers broken up, and are good now for an average speed of 25·83 kts. All are now fitted for minesweeping, and constitute a special division. (13th flotilla. *Opiniâtre* scrapped 1933.

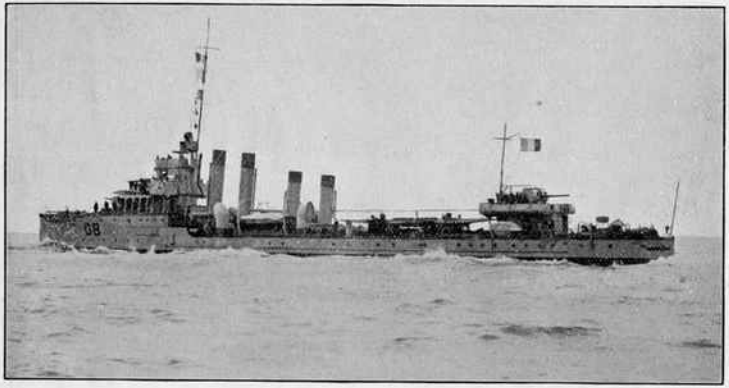


1 Special Boat. (1913 Programme).

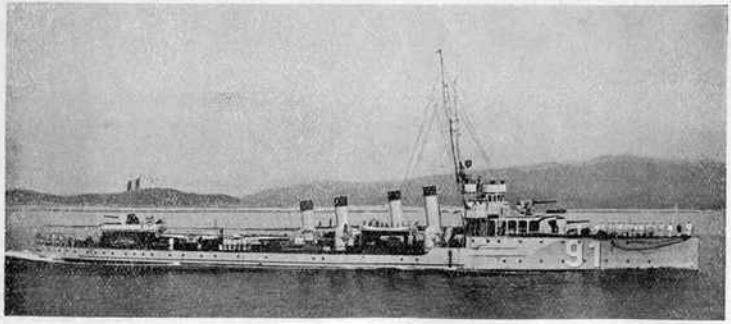
Note.—Torpedo tubes now mounted on centre line, *not* as in plan.

1 *Normand, Havre:* ***Enseigne Gabolde*** (22nd April, 1921). 802 tons. Dimensions: 269×26·9×10 feet. Armament: **3**—3·9 inch, **1**—14 pdr. AA., **4**—21·7 inch torpedo tubes in two twin deck mountings. Designed H.P. 20,000=33 knots (reached on trials). Parsons geared turbines. Normand boilers. Fuel: 200 tons oil. Complement, 98.
Note.—Began in December, 1913. Work on this T.B.D. was suspended during the War and not resumed until September, 1918. Completed in summer of 1923 and joined Fleet early in 1924. 6 hours' trial=32·45 kts. (*max.* 33.45).

Forward superfiring 3.9 inch reported to have proved an unsatisfactory arrangement.

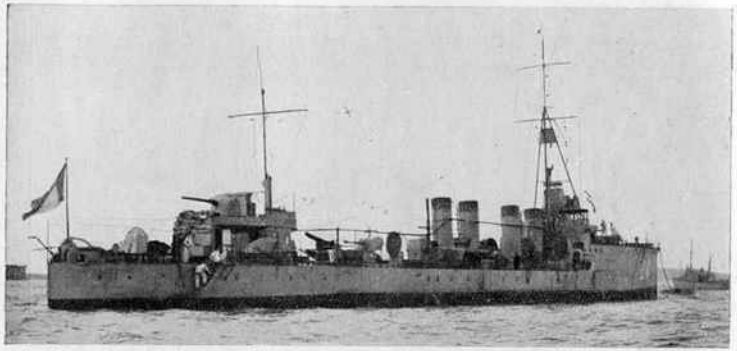


ENSEIGNE GABOLDE. 1925 *Photo, by courtesy of the Ministry of Marine.*



(Fore funnels lowered). 1931 *Photo.*

2 Bory Type.



M. P. LESTIN. (fore funnel now raised). 1921 *Photo, H. Freund, Brest.*

General Notes.—These boats are armed with **2**—3·9 inch, **4**—9 pdr., **1**—14 pdr. (AA.), **4**—18 inch tubes in pairs. All adapted for mine sweeping and carry D.C. Endurance: about 1,500 miles at 15 kts. and 400—500 at full speed. Complement, 98.

War Losses: *Boutefeu, Faulx, Fourche, Renaudin, Dague.*

Removed from List: *Magon, Francis-Garnier, Capitaine Mehl, Commandant Bory, Dehorter, Mangini, Protet, Commandant Lucas, Bisson, Commandant Rivière, Bouclier, Cimeterre, Casque.*

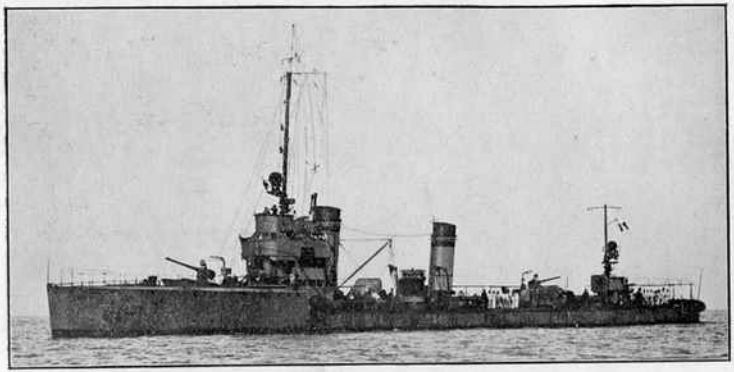
(1913 Programme).

E. ROUX. 1920 *Photo, M. Bar, Toulon.*

2 *Rochefort Dockyard:* ***Enseigne Roux*** (1915), ***Mécanicien-Principal Lestin*** (1915). 787 tons. Dimensions: 271×29·9×10 feet. Designed H.P. 17,000=30 kts. Fuel: 200 tons oil. Endurance for these two boats: about 2,000 miles at 15 kts. and 550 miles at full speed. Begun as *M86* and *M87*. Still good for 30 kts. if pressed.

(*Continued on next page*)

2 Deligny Class (ex-German "Mobilisation" type).

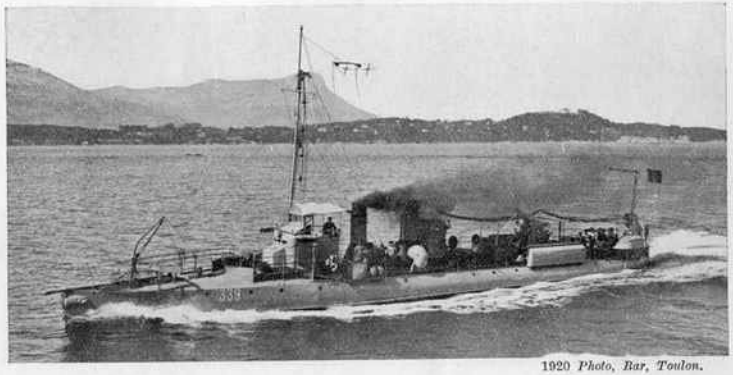


DELIGNY.

1925 *Photo, by courtesy of the Ministry of Marine.*

2 *Schichau* (Elbing) boats 1916–18: ***Mazare*** (ex-German *S* 135) and ***Vesco*** (ex-German *S* 134). Dimensions: 272·3 ×27·3×8·4 feet. 1,030 tons. H.P. 24,500=34·6 kts. Complement 113. Guns: 3—4·1″/45 cal. AA., 1—2 pdr. Tubes: 6—19·7″. Oil fuel: 162 tons *normal*, 305 tons *max.*=1,760 miles at 20 kts. Surrendered at Cherbourg and added to French Navy, September, 1920. Were units of German *S* 131—139 class.

Torpedo Boats.



1920 *Photo, Bar, Toulon.*

4 *Normand Type*: ***Nos. 321, 336, 349, 369.*** Built 1903—1907. Displ. 100 tons. H.P. 2000=25 kts. Compl. 23. Armament: 321=1—75 M/M. 1—15″ TT., 336=no guns but 3—15″ TT., others 1—75 m/m., 1—37 M/M., 1—15″ TT.

CONVOYERS (Escorteurs).

12 boats: ***Melpomene*** (Ch. de Bretagne, Nantes)
Pomone (Ch. de Loire, Nantes)
Flore (Ch. de Bretagne, Nantes)
Iphigenie (Ch. de Loire, Nantes)
La Poursuivante (Ch. de F. Dunkirk)
L'Incomprise (Ch. de la Seine Worms)
La Bayannaise (Ch. Sud Ouest. Bordeaux)
La Cordeliere, ***Branlebas*** } (Augustin Normand)
Bombrade (Ch. de la Loire, Nantes)
Bouclier
Baliste

All ordered 1933. Provided for under 1930-31-32 Programmes.

Displacement: 600 tons. Length about 236·2 feet (72m.).

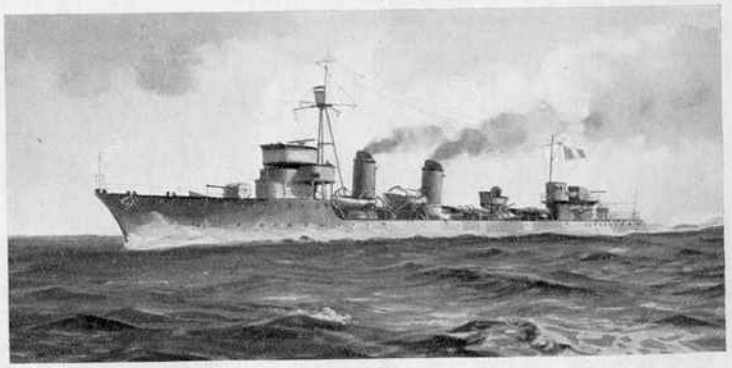
Guns: 2—90 m/m. 2—37 m/m., 2 Twin M.G.

Tubes: 4—16″ (400 m/m), in 2 single and 1 twin mount.

H.P.=35 kts.

Radius: 1,800 at 18 kts.; 700 at 35 kts.

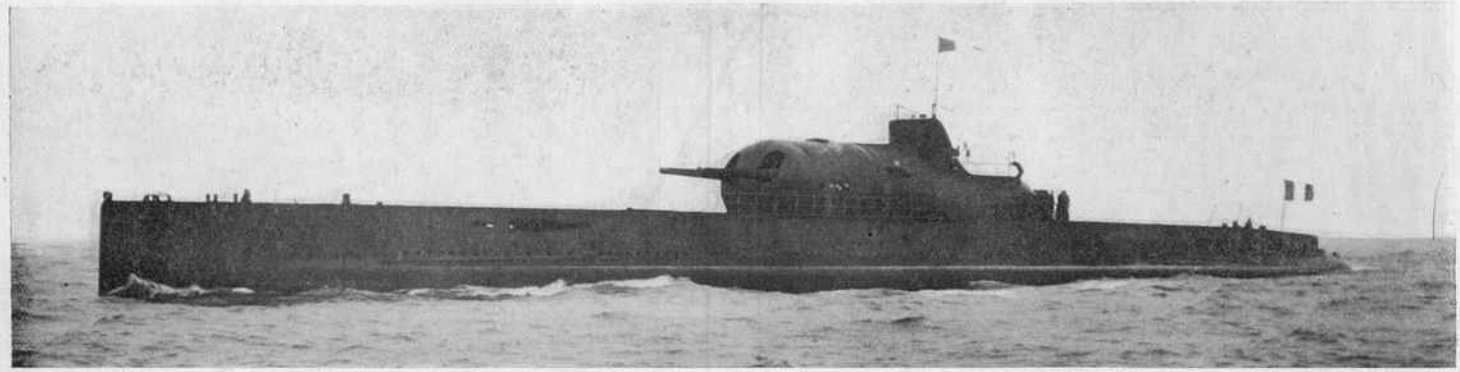
NOTE.—The forward beam Tubes are single: the after is a centre-line twin mounting.



1933 *Drawing, Oscar Parkes.*

SUBMARINES—I: FIRST CLASS.

1 Cruiser Type.



SURCOUF. 1931, *Official Photo.*

SURCOUF (November 18, 1929). Cherbourg. 1926 Programme. Completed 1931.

Dimensions: 393·7×29·5×23 feet (110×9×7·19 *m.*)

Displacement: 2,880/4,300 tons.

Machinery: Diesels, 7,600 B.H.P. = 18 kts. *surface.*
Motors, 3,400 H.P. = 10 kts. *submerged.*

Guns: **2**—8 inch (203 mm.)
2—37 mm. AA.
4—M.G.

Tubes: **14**—21·7 inch (550 mm.)
22 Torpedoes carried.

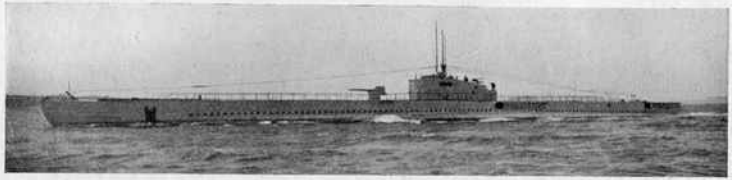
Compl.: 150.

Radius: 10,000 miles at 10 kts.

1932 *Photo.*

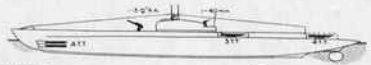
Notes:—Is the largest submarine in the world, representing an experimental type not likely to be repeated. Designed as a corsair and carries the largest guns allowed by the Treaty. Is to carry a small seaplane. Can dive in 2 minutes. The Torpedo armament appears to be disposed as follows: **6** in bows, 8 in 2 sets of training tubes aft.

30 Redoubtable Class.



1932 *Photo*

VENGEUR. 1930 *Photo, favour of M. of Marine.*



30 *Roquebert type.*

1924 Programme.

Redoubtable (Feb. 24th, 1928) } Cherbourg.
Vengeur (Sept. 1st, 1928)

1925 Programme.

Pascal }
Pasteur } (July 19th, 1928), Brest.
Henri Poincare }
Poncelet } (April 10th, 1929), Lorient.
Fresnel (June 8th, 1929), St. Nazaire (Penhoët).
Archimede (Sept. 6th, 1930), Ch. Nav. Fr. Blainville.
Monge (June 25th, 1929), La Seyne.

1926 Programme.

Acteon (April 10th, 1929) }
Acheron (Aug. 6th 1929) } A. C. Loire.
Argo (April 11th, 1929), Ch. Dubigeon, Nantes.
Achille }
Ajax } (May 28th, 1930) Brest.

1927 Programme.

Persée (May 23rd, 1931), C. N. F. Blainville.
Protee (July 31st, 1930), F. C. Havre.

Pégase (July 28th, 1930), A. C. Loire.
Phénix (April 12th, 1930), Dubigeon.

1928 Programme.

L'Espoir } Cherbourg. July 18th, 1931.
Le Glorieux } Nov. 29th, 1932.
Le Centaure } Brest. Oct. 14th, 1932.
Le Héros }
Le Conquerant A. C. Loire.
Le Tonnant La Seyne.

1930 Programme.

Agosta }
Beveziers } Cherbourg.
Ouessant }
Sidi-Ferruch }
Sfax }
Casablanca } A. C. Loire.

Displacement: 1,644 tons *surface*; 2,080 tons *submerged* for first two; remainder 1,678 tons *surface*; 2,060 tons *submerged*. Dimensions: 302½ × 30½ × 15½ feet. Diesels: 2 sets Sulzer or Schneider H.P. 2 × 3,000 = 18 kts. (Trials, 19.5 kts.) Electric motors of H.P. 2,000 = 10 kts. *submerged*. 1 auxiliary Diesel, H.P. 750. 2 screws. Armament: 1—3·9" AA., 1—37 m/m AA., 1—M.G., 11—21·7" tubes, including 2 sets of revolving tubes, 1 bow, 1 stern.

1930 boats have two 4,200 H.P. Diesels. Radius of action = 30 days cruising.

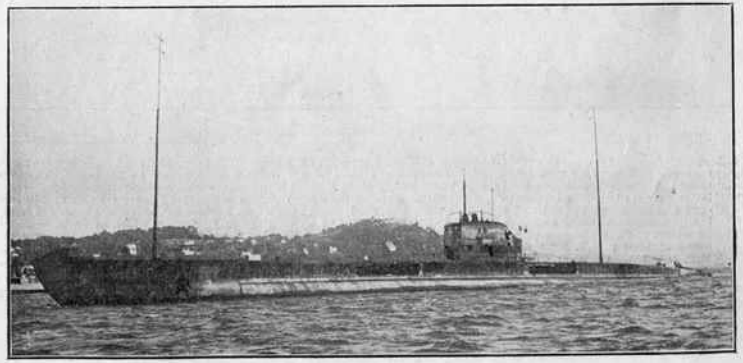
Notes.—Have proved very successful on trials. *Vengeur* and *Redoubtable* performed a cruise to the West Indies in 1930 without mishap, and were able to make 19 kts. easily without being pressed. *H. Poincaré* maintained an average of 17·60 kts. for 48 hours on trials. 1927 and 1928 boats reach 20 kts. and 1930 boats with 8,400 H.P. are expected to exceed 21 kts. *Promethée* sunk on trials, July 8th, 1932.

9 Requin Class.

MARSOUIN. 1926 *Photo.*

9 *Fuzier-Roquebert* type: ***Requin*** (19th July, 1924), ***Morse*** (11th Nov., 1925), ***Narval*** (9th May, 1925), ***Souffleur*** (Oct. 1st, 1924), ***Caiman*** (3rd March, 1927), (all Cherbourg), ***Dauphin*** (1925), ***Espadon*** (28th May, 1926), (both Toulon), ***Marsouin*** (Dec. 27th, 1924), ***Phoque*** (16th March, 1926), (both Brest). 974 tons (*on surface*), 1410 tons (*submerged*). Dimensions: 256½ (p.p.) × 21½ × 15 feet. Complement, 51. Machinery: 2 Diesel motors, of Sulzer or Schneider-Carels type, each 1450 H.P. Total 2900 H.P. = 16 kts. Electric drive: 248 " D " type batteries, 1800 H.P. = 10 kts. Radius: 7000 miles at 9 kts. (*on surface*), 105 miles at 5 kts. (*submerged*). Endurance: equal to 30 days' cruising. Guns: **1**—3.9 inch, **2** M.G. AA. Torpedo tubes: **10**—21.7 inch (4 bow and 2 stern submerged; 4 above water, revolving in pairs before and abaft C.T.). 32 torpedoes (24 of 1922 model, 8 of 1919 model) carried by *Caiman, Espadon, Phoque*; 16 by others.

Notes.—*Requin, Souffleur, Morse, Narval, Marsouin, Dauphin* begun as *Q* 115—120 of 1922-1923 Programme. Other three came under Coast Defence Vote of June 30, 1923. All completed 1926-27. Freeboard about 7 feet. Top of C.T. is 13 feet above water. Can dive with safety to 100 metres (say, 55 fathoms). On commissioning, *Requin* carried out a 5,000 mile cruise, occupying 31 days in African waters, without mishap of any kind.



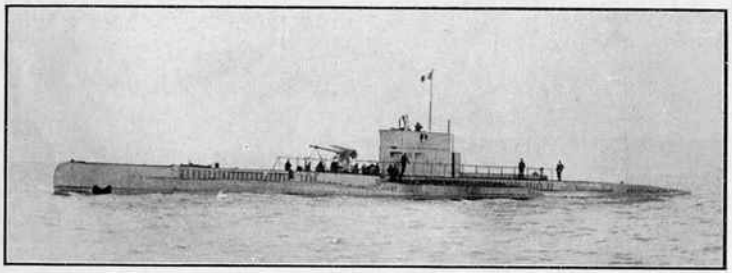
DAUPHIN. 1926 *Photo, M. Bar, Toulon.*

6 Saphir Class (Minelayers.)

TURQUOISE. 1930 *Photo, A. Ganda.*

6 *Normand-Fenaux* type : ***Saphir*** (Dec. 20th, 1928) ; ***Turquoise*** (May 16th, 1929), Toulon, 1926 ; ***Nautilus*** (Mar. 21st, 1930), Toulon, 1927 ; ***Rubis*** (Sept. 30th, 1931), Toulon, 1928 ; ***Diamant*** (Toulon, 1929) ; ***Perle*** (Toulon, 1930). Displacement : 669 tons *on surface*, 925 tons *submerged*. Dimensions : 210½ × 23½ × 13¼ feet. Machinery : 2 sets Vickers-Normand 4-cycle Diesels. B.H.P. 1300 = 12 kts. *Submerged* speed, 9 kts. Armament : **1**—3 inch AA., **5**—21.7 inch tubes, 32 minelaying chutes, arranged on Normand-Fenaux system. Carry **6** torpedoes and **32** mines of 460 lbs. weight. First two authorised under 1925 Programme, third under 1926, fourth 1927, fifth 1928-29.

1 Special Boat (Minelayer.)

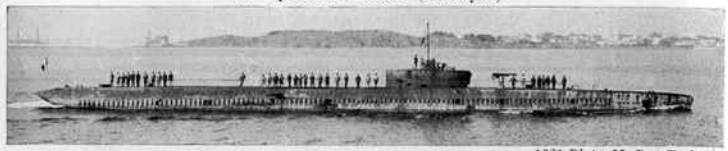


PIERRE CHAILLEY. 1925 *Photo, by courtesy of Messrs. Normand.*

1 *Normand-Fenaux* type : ***Pierre Chailley*** (Ch. A. Normand Le Havre, 19th Dec., 1922). Displacements : 798 tons *on surface*, 1181 tons *submerged*. Dimensions : 229¾ × 26¼ × 13 feet. Guns : **1**—3·9 inch. Torpedo tubes : **2**—18 inch bow and **2**—18 inch immediately abaft C.T. in twin mounting on a revolving platform. (The latter pair are normally hidden by a cover which matches the deck.) Mines carried : 64 Sautter-Harle of 440 lbs. each (maximum stowage) in 32 chutes or cells—disposed 16 on each beam, 2 mines in each, about centre of boat, between inner and outer hulls. Laying rate has been *stated* to be 40 mines in 4 minutes, which at 6 kts. = 15 to 30 metres spacing between planted mines. Machinery : 2 sets of 900 H.P. 2-cycle 6-cylinder Sulzer-Diesel motors, totalling 1800 B.H.P. for a *max. surface* speed of 14 kts. When *submerged*, electric motors + batteries of 1200 H.P. = 9 kts. Oil fuel : 60 tons (sufficient for 20 days' cruising). Endurances : 2800 miles *on surface*, at 10 kts., 80 miles *submerged* at 9 kts. Built under 1917 Programme.

Note.—Actual number of mines normally carried in service is understood to be 40.

1 Special Boat (Minelayer.)



1921 *Photo, M. Bar, Toulon.*

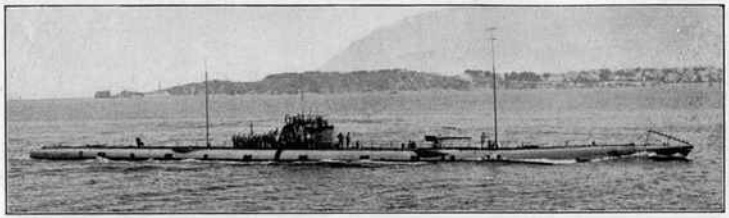
1 *Schneider-Laubeuf* type : ***Maurice Callot*** (Ch. de la Gironde, Bordeaux ; launched March 26th, 1921). Displacements : 842 tons *on surface* ; 1298 tons *submerged*. Dimensions : 247½ × 22 × 12½ feet. Guns : **1**—14 pdr. on AA. mount. Torpedo tubes : **4**—18 inch bow and **2**—18 inch midway between C.T. and stern. 8 torpedoes carried. Mines carried : 27—200 kg., in "wet" stowage on 3 horizontal belt conveyors (9 mines to each row) abaft C.T., above pressure hull and below superstructure deck. Laying rate believed to be one mine from each row at 12 seconds' intervals, which at 5 kts = 30 metres spacing between planted mines.

Machinery : For *surface* running, 2 sets of 8 cyl. 2 cycle Schneider-Carels Diesel motors (16.1" bore × 17.7" stroke), each engine developing *about* 1450 B.H.P. at 330 r.p.m. Total B.H.P. 2900 = 16.5 kts. speed *on surface*. These are the same type of motors as those mounted in *Fulton* and *Joessel*, which have proved remarkably reliable after an extended series of trials. Electric motors + batteries of 1640 H.P. = 10.5 kts. *submerged*.

Endurance : 44.87 tons oil fuel carried, giving following endurances *on surface* : (*a*) 1960 miles at 13 kts. with both motors running ; (*b*) 2800 miles at 11 kts. with one engine running. When *submerged*, 118 miles at 5 kts.

Complement : 4 officers + 40 men. Double-hull design built on Laubeuf principle. Begun under 1917 Programme ; began acceptance trials, August, 1921. On a 50 day cruise is said to have maintained average speeds of $\frac{16}{16\frac{1}{4}}$ kts.

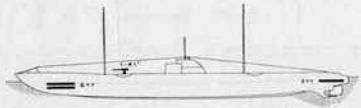
2 Léon Mignot Class (ex-German).



J. AUTRIC. 1924 *Photo, M. Bar, Toulon.*

2 *ex-German* "Mittel-U" type: ***Jean Autric*** (ex-German *U* 105), ***Léon Mignot*** (ex-German *U* 109). Both built by Krupp-Germania, Kiel, and completed 1917. Displacements: 744 tons *on surface*, 1053 tons *submerged*. Dimensions: *about* 235 × 20½ × 12½ feet. Periscope depth: 45 feet. Machinery: 2 sets 6 cylinder 4 cycle M.A.N. Type Diesel engines. B.H.P. 2400 = 16.5 kts. *on surface*. Speed *submerged*: 8.5 kts. Oil: 82 tons. Endurance: 9280 miles at 8 kts. *on surface*; 50 miles at 6 kts. *submerged*. Guns: **1**—4.1 inch. Tubes: **6**—19.7 inch (4 bow, 2 stern). Stowage for 13 torpedoes. Complement, 40.

Notes.—Units of the German *U* 105—*114* class. Are double-hull type.



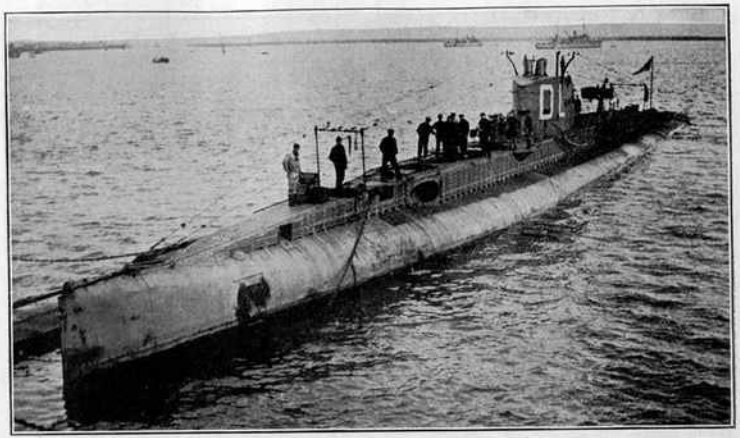
4 Lagrange Class.

ROMAZZOTTI. 1924 *Photo, M. Bar, Toulon.*

4 *Hutter* type: ***Lagrange*** (1917), ***Regnault*** (25th June, 1924), and ***Romazzotti*** (1917). All built at Toulon D.Y., ***Laplace*** (Rochefort D.Y., 1919). Displacements: 836 tons *on surface*, 1317 tons *submerged*. Dimensions: 246¾ × 20.9 × 13.2 feet. Machinery: *on surface*, 2 sets 1300 B.H.P. Sulzer-Diesel engines, totalling 2600 B.H.P. for 16½ kts. *Submerged* speed: 11 kts. Endurance: *on surface*, 2500 miles at 14 kts., 4200 miles at 10 kts., 6000 miles at 8 kts. When *submerged*, 115 miles at 5 kts. Armament: **2**—14 pdr. guns. **8**—17.7 inch torpedo discharges, arranged as in *Dupuy de Lôme*, below. Stowage for 10 torpedoes and 440 rounds of ammunition for guns. Complement, 47.

Notes.—Begun as *Q* 111—114 of 1914 Programme. General design as *D. de Lôme* class.

2 Dupuy de Lôme Class.

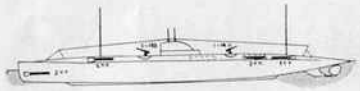


DUPUY DE LÔME. 1927 *Photo, H. Freund, Brest.*

2 *Hutter* type: ***Dupuy de Lôme*** (1915) and ***Sané*** (1916). Both built at Toulon D.Y. Displacements: 748 tons *on surface*, 1291 tons *submerged*. Dimensions: 246 × 20.9 × 13.7 feet. Machinery: *on surface*, Diesel engines (recently renewed) of 2900 H.P. = 16 kts. *Submerged* speed: 10 kts. Armament: **2**—14 pdr. guns and discharge positions for **8**—18 inch torpedoes as follows: 2 *submerged* tubes, W.T. parallel, built into bows; 2 *above water*, fixed, divergent, built into superstructure forward: 2 revolving, in twin mount, under superstructure abaft C.T.; 2 fixed, divergent, built into superstructure aft. Oil: 100 tons. Complement, 43.

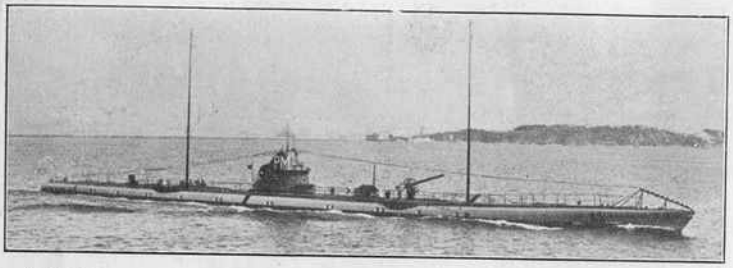
Notes.—Begun as *Q* 105 and *Q* 106 of 1913 Programme. Both completed 1916. Are enlargements of M. Hutter's design for the *Bellone* class. *Dupuy de Lôme's* 2 Diesels are by Krupp. *Sané* has two Koerting motors.

SANÉ. 1930 *Photo, Lt. T. D. Manning, R.N.V.R.*

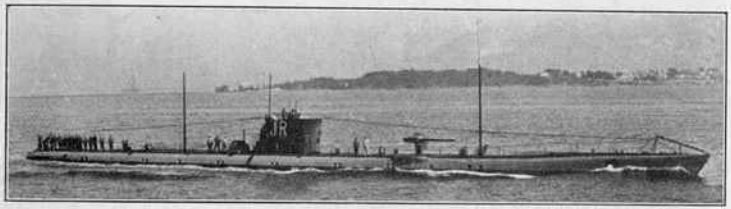


LAGRANGE AND DUPUY DE LÔME *Classes.*

2 Pierre Marrast Class



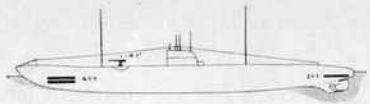
P. MARRAST. 1924 *Photo, M. Bar, Toulon.*



J. ROULIER 1924 *Photo, M. Bar, Toulon.*

2 *ex-German* "Mittel-U' type: ***Pierre Marrast*** (ex-German *U 162*), ***Jean Roulier*** (ex-German *U 166*), both built by Bremer-Vulkan, Vegesack, and completed 1918. Displacements: 744 tons *surface*; 1011 tons *submerged*. Dimensions: 235 × 21 ft. 1 in. × 12 ft. 9 in. Machinery: 2 sets 6-cylinder 2 cycle. M.A.N. Diesel, B.H.P. 2400 = 16·2 kts. *on surface*. *Submerged* speed: 8·5 kts. Oil fuel: 47/109 tons. Endurance: 6500 miles at 8 kts. *on surface*; about 90-100 miles at 3 kts. *submerged*. Guns: **1**—4·1 inch. Torpedo tubes: **6**—19·7 inch (4 bow, 2 stern). Stowage for 12 torpedoes. Complement, 42.

Notes:—Units of German *U 160*—172 class and among last submarines completed for the German Navy. Double-hull design. Appearance almost identical with *L. Mignot* type.



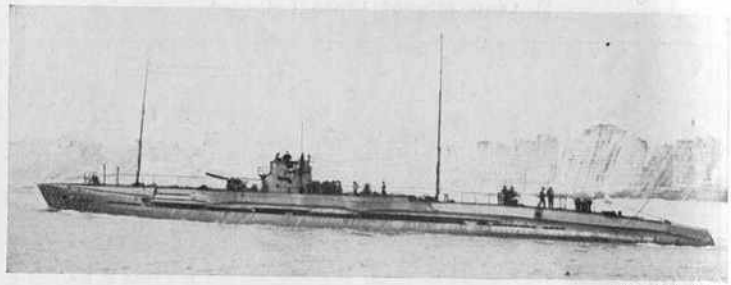
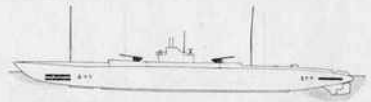


Photo added 1923.

1 *ex-German* "UK-*Holder*" type: ***Halbronn*** (ex-German *U 139* (*Schweiger*), built by Krupp-Germania, Kiel; completed 1917). Displacement: 1841 tons *on surface*, 3050 tons *submerged*. Dimensions: 302¾ × 29½ × 15½ feet. Machinery: 2 sets Krupp or M.A.N. 6 cylinder 4 cycle Diesel engines. B.H.P. 3300 = 15.8 kts.* *on surface*. Also 1—550 H.P. auxiliary engine, used for charging batteries which could be used for running at low cruising speeds through main motors. Speed *submerged*: 7.7 kts. Oil fuel: 104/295 tons. Endurance: 12,630 miles at 8 kts. *on surface*. Guns: **2**—3.9 inch. Torpedo tubes: **6**—19.7 inch (4 bow, 2 stern). Stowage for 19 torpedoes. Complement, 54.

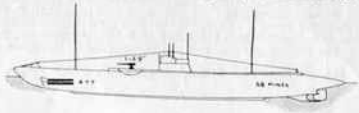
Notes.—Unit of German *U 139—141* class. Double-hull type, fitted with anti-rolling tanks. Found deficient in stability by Germans; *U 141* of the same class had wood filling along upper deck to increase stability. This "Cruiser" design was a very qualified success.



1920 *Copyright photo, M. Bar, Toulon.*

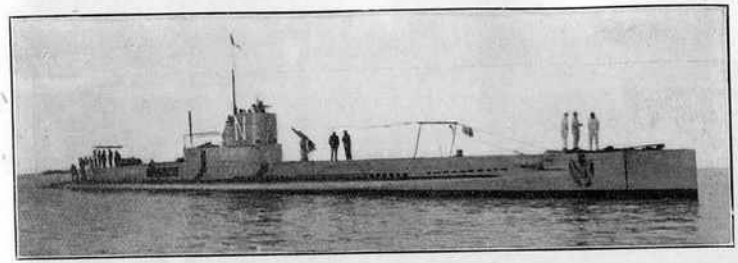
1 *ex-German* "UE II" type: ***René Audry*** (ex-German *U 119*, built by Vulkan, Hamburg, completed 1918). Displacements: 1041 tons *on surface*, 1800 tons *submerged*. Dimensions: 267 ft. 5 in. × 24 × 13 ft. 10 in. Periscope depth: *about* 45 feet. Machinery: 2 sets of 6 cyl. 4 cycle M.A.N. Diesel engines *on surface*, B.H.P. 2400 = 13.4 kts.* *Submerged* speed: 7.5 kts.* Endurance: 9000 miles at 7 kts. *on surface*. Oil capacity: 93.5/194 tons. Guns: **1**—5.9 inch (Krupp). Torpedo tubes: **4**—19.7 inch (bow). 18 torpedoes carried; 10 in pressure-tight cylinders alongside upper deck, rest within hull. 2 horizontal mine-laying chutes and ports under stern. Stowage for 42 mines, but only 38 can be carried with safety. Originally unit of German *U 117—126* class, designed for mine-laying off U.S. coast. Were double-hull boats. Complement, 49.

*A sister boat, *U 117*, delivered to U.S. Navy, had a *max. surface* speed of 14.7 kts.; *max.* speed *submerged*, 7.2 kts.



First Class—*continued.*

1 Gustave Zédé Class.



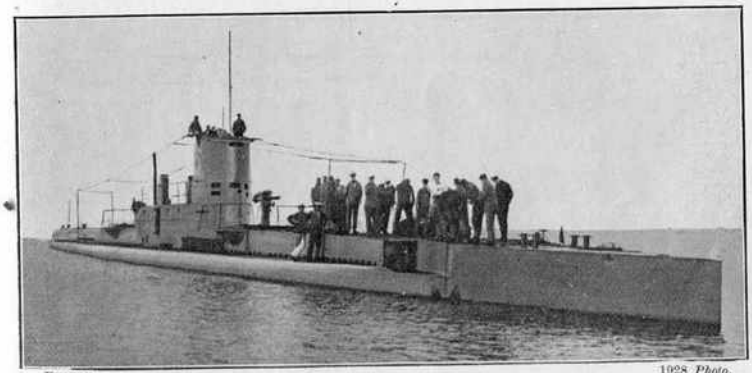
1 *Simonot* type: ***Gustave Zédé*** (Cherbourg D.Y., 1913). Displacements: 771 tons *on surface*, 1098 tons *submerged*. Dimensions: 242½ × 19½ × 13½ feet. Machinery: Diesels (2 sets M.A.N.) of 2400 total B.H.P. = 16 kts. Electric motors + batteries, 1540 H.P. = 10·5 kts. *submerged*. Radii of action: 2300 miles at 10 kts. and 1800 miles at 14 kts. *on surface*. Armament: **2**—14 pdr. Torpedo tubes: **2**—18 inch tubes + **6**—18 inch torpedoes carried in external frames. Complement, 42.

Notes.—Begun as *Q 32* of 1911 Programme. Completed October, 1914. Sank 1916, after accumulator explosion, but was salved and repaired.

GUSTAVE ZÉDÉ.

JOESSEL.

2 Joessel Class.



FULTON. 1928 *Photo.*

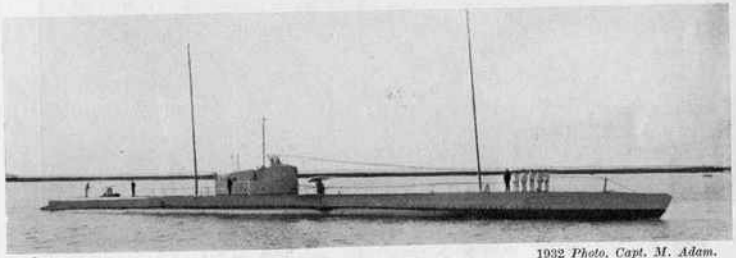
2 *Simonot* type: ***Fulton*** (1919) and ***Joessel*** (1917). Both built at Cherbourg D.Y. Displacements: *Fulton*, 915/1203 tons. *Joessel*, 838/1200 tons. Dimensions: 242·8 × for *Fulton* 19·7 × 13·8 feet; for *Joessel* × 23·4 × 14.5 feet. Machinery: *on surface*, 2 sets of 8 cylinder 2 cycle Schneider-Carels Diesel engines (16.1" bore × 17.7" stroke) developing *about* 1450 B.H.P. at 330 r.p.m. Total power: 2900 B.H.P. = 16½ kts. *Submerged* speed: 11 kts. Oil fuel: 125,000 litres. Endurance: *on surface* and *submerged* about the same as *Lagrange* class in next column. Armament: **2**—14 pdr. guns on AA. mounts and **8**—18 inch tubes (4 *submerged* in bow; 2 fixed divergent on deck forward; 2 revolving on deck aft). Stowage for 10 torpedoes. Complement, 47.

Notes.—*Joessel* reported to have made over 18 kts. *on trials*. Reports on their recent performance during long cruises indicate that they are very reliable and successful boats.

Second Class.

20 Diane Class.

ARGONAUTE. 1931 *Photo.*



ORION. 1932 *Photo, Capt. M. Adam.*

All are of *Normand-Fenaux* type with minor differences, according to builders. (See note.)

1926 PROGRAMME

Argonaute (May 23rd, 1929)	Schneider-Creusot
Arethuse (Aug. 8th, 1929)	
Diane (May 13th, 1930)	Normand
Méduse (Aug. 26th, 1930)	

1927 PROGRAMME AS Q 159–162

Amphitrite (Dec. 20th, 1930)	Normand
Antiope (Aug. 19th, 1930)	Ch. Seine Maritime
Amazone (Dec. 28th, 1931)	Worms
Atalante (Aug. 5th, 1930)	Schneider

1928 PROGRAMME AS Q 163–168

Orphée (Nov. 10th, 1921)	Normand
Oreade (May 23rd, 1932)	Worms
Orion (April 21st, 1931)	Loire
Ondine (May 4th, 1931)	Dubigeon

1929 PROGRAMME AS Q 174–177

Psyche (Aug. 4th, 1922)	Normand
Sybille	Worms
Vestale (May 25th, 1922)	Schneider
Sultane (Aug. 9th, 1922)	

1930 PROGRAMME AS Q 185–188

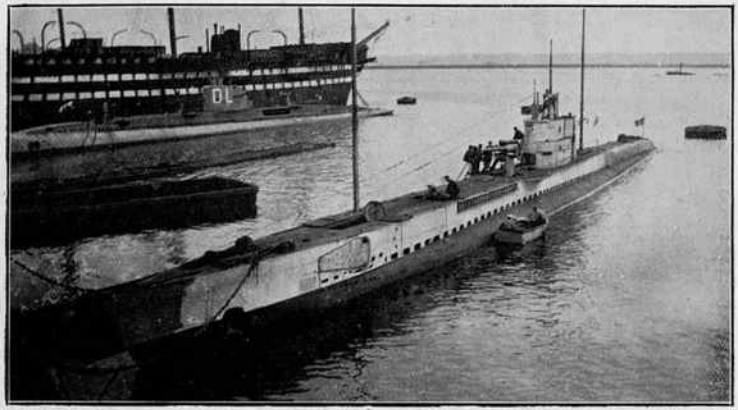
Minerve	Cherbourg
Junon	Normand
Venus	Worms
Iris	Dubigeon

Displacement: 558 to 571/809 tons. Dimensions: 219½ × 18 × 14 feet. Armament: 1—3" AA., 1 M.G., 8—21·7" tubes. Machinery: 2 sets of Diesels as under noted of B.H.P. 1,300–1,420 = 14 kts. *surface*. Electric motors, H.P. 1,000 = 9 kts. *submerged*. Radius: 3,000 miles at 10 kts; 78 miles at 5 kts.

Note.—*Orion* and *Ondine* are of Loire-Simonet type, 558 tons. *Diane, Méduse, Amphitrite, Amazone, Antiope, Orphée, Oreade, Psyche, Sybille* have each 2 sets of 4-cycle Vickers-Normand type Diesels. Plans by Ch. Augustin Normand. *Arethuse, Argonaute, Atalante, Vestale, Sultane* each 2 sets of 2-cycle Schneider-Carel type; and *Orion* and *Ondine* 2 sets of 2-cycle Sulzer type. Vessels of 1930 Programme are from designs by the Sec. Tech. d. Min. Mar. and will differ from earlier units in details of hull, C.T; H.P. and speed.

SUBMARINES II : SECOND CLASS—*continued.*

11 Sirène Class.



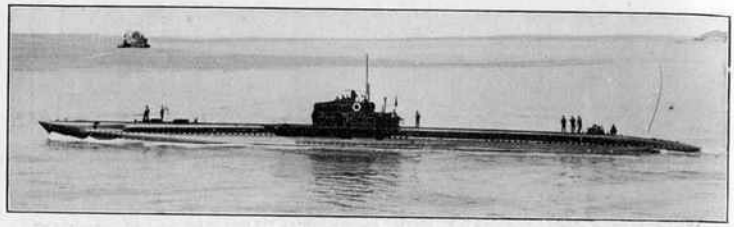
SIRÈNE. 1926 *Photo, H. Freund, Brest.*

SIRÈNE. 1927 *Official Photo.*

4 *Simonot* type, built by A. & C. de la Loire, St. Nazaire: ***Naïade*** (Oct. 20, 1925), ***Sirène*** (August 6, 1925), ***Nymphe*** (April 1, 1926), ***Galatée*** (Dec. 18, 1925). Displacement: 552 tons surface, 745 tons submerged. Dimensions: 210 (*p.p.*) × 17 × 11½ feet. Machinery: 2 sets 2-cycle Sulzer Diesels, B.H.P. 1,300 on *surface*, 1,000 submerged.

Following particulars apply to all 12. Complement: 40. 140 to 144 "D" type electric batteries. Speed: 14 kts. on *surface*, 9·5 kts. *submerged*. Radius: *surface*, 2,000 miles at 10 kts.; *submerged*, 90 miles at 5 kts. Endurance equal to 20 days' cruising. Can dive to 45 fathoms. Guns: **1**—4 inch AA., **2** M.G. AA. Torpedo tubes (19·7 inch): **7**. 13 torpedoes carried. Cost stated to be Frs. 8,500,000 each.

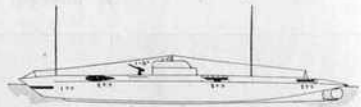
Notes—Ariane, Calypso, Circé, Naïade, Ondine, Sirène, were laid down as *Q.121—126* of 1922-23 Programme; others under Coast Defence Vote of Sept. 30, 1923.

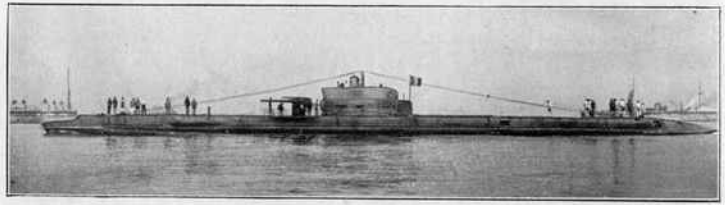


ARIANE. 1927 *Official Photo.*

3 *Normand-Fenaux* type, built by C. & A. Augustin Normand, Le Hâvre: ***Ariane*** (August 6, 1925), ***Danaé*** (Sept. 11, 1927), ***Eurydice*** (May 31, 1927). Displacement: 576 tons *surface*, 763 tons *submerged*. Dimensions: 216½ (*p.p.*) × 16 × 11½ feet. Machinery: 2 sets 4-cycle Diesels, Vickers-Normand type. Electric motors by Schneider et Cie. 1,200 B.H.P. on *surface*, 1,600 *submerged*.

Note.—This type is reported to have given great satisfaction in service. A fourth boat, *Ondine*, lost by collision with a Greek Steamer, October 3rd, 1928.

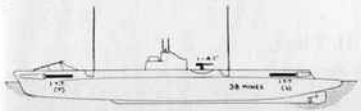


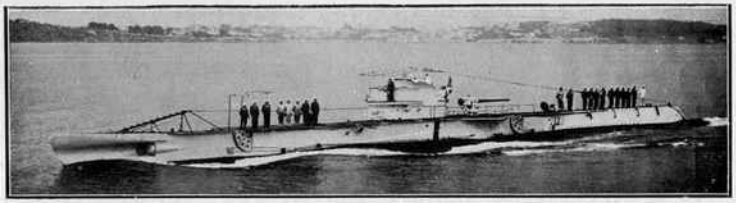


DORIS. 1929 *Photo, M. Bar, Toulon.*

4 *Schneider-Laubeuf* type, building by Schneider et Cie, Chalon-sur-Saône: ***Circé*** (Oct. 29, 1925), ***Calypso*** (Jan. 1926), ***Doris*** (Nov. 25, 1927), ***Thetis*** (June 30, 1927). Displacement: 552 tons *surface*, 764 tons *submerged*. Dimensions: 204½ (*p.p.*) × 17½ × 11 feet. Machinery: 2 sets 2-cycle Schneider-Carels Diesels, 1,250 B.H.P. on *surface*, 1,000 *submerged*.

1 ex-German Boat (Mine-laying).





1924 *Photo, by courtesy of Ministry of Marine.*

1 *ex-German* "UE 1" type: ***Victor Réveille*** (ex-German *U 79*, built by Vulkan, Hamburg, completed 1916). Displacements: 681 tons *on surface*, 980 tons *submerged*. Dimensions: 186 ft. 4 in. × 19 ft. 10 in. × 15 ft. 1 in. Machinery: 2 sets of Diesel engines, B.H.P. 1100 = 10.6 kts. *on surface*. *Submerged* H.P. 600 = 7·5 kts. Endurance: 7880 miles at 7 kts. *on surface*, 75 miles at 3 kts. *submerged*. Oil capacity: 77/87 tons. Guns: **1**—4.1 inch (Krupp). Torpedo tubes: **2**—19.7 inch, bow tube to port, stern tube to starboard, and both *above water* when in surface trim. 2 horizontal mine-laying tubes under stern. Stowage for 38 mines and 2 torpedoes. Originally unit of German *U 71—80* class. Saddle-tank type of hull. Complement, 38.

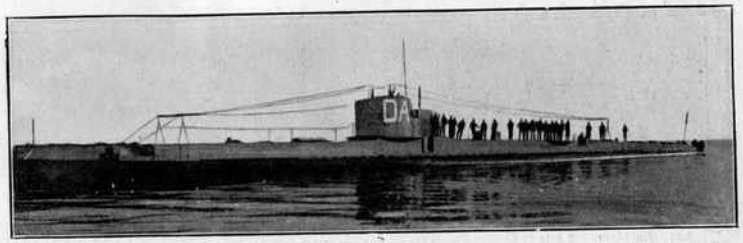
2 Armide Class.

AMAZONE. 1921 *Photo, Dussau, Toulon.*

2 *Schneider-Laubeuf* type: ***Amazone II*** (1916) and ***Armide*** (ex-Japanese *No. 14*, 1915). Built by Schneider et Cie, Chalon-sur-Saône. Displacements: 418 tons on *surface*, 665 tons *submerged*. Dimensions: 184½ × 17 × 10½ feet. Machinery: 2 sets, Schneider-Carels Diesel engines, 2200 H.P. = 15 kts. on *surface*. *Submerged* speed: 10 kts. Endurance: 960 miles at 13 kts., 2600 miles at 11 kts. on *surface*. Armament: **1**—1 pdr. (not always carried). Torpedo tubes (all 18 inch): **2** in bow + **6** torpedoes carried in external frames. *Armide* has 2 additional tubes aft. Double-hull type.

Note.—Amazone begun for Greek Navy; *Armide* for Japanese Navy; but for all practical purposes they can be considered as a uniform class, taken over for French Navy during War. *Antigone* (sister to *Amazone*) condemned 1927.

1 Daphne Class.

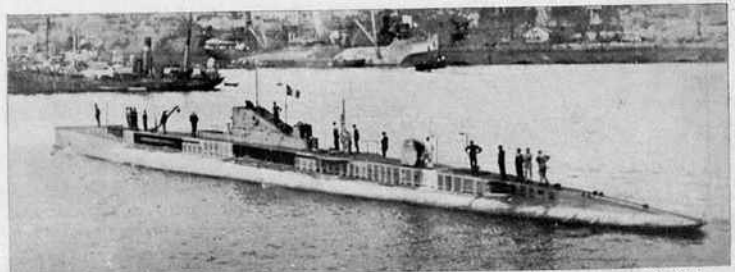


DAPHNE. *Photo added* 1928.

1 *Simonot* type: ***Daphné*** (Cherbourg, Oct. 25, '15). Displacements: 647 tons *on surface*, 950 tons *submerged*. Dimensions: 223 × 18½ × 12½ feet. Machinery: 2 sets 900 B.H.P. Sulzer Diesel engines, 1800 H.P. = 15·3 kts. *on surface*. *Submerged* speed: 11 kts. Endurance: *on surface* (*a*) 2800 miles at 14 kts., (*b*) 4000 miles at 11-12 kts., 100 miles at 5 kts. when *submerged*. Armament: **1**—14 pdr. gun, **10**—18 inch torpedo tubes (2 *submerged*, parallel, at bow; 2 *above water*, divergent, at bow; 4, in revolving pairs, *above water*, under superstructure, before and abaft C.T. 2 at stern, *submerged*). Complement, 35. Is an enlarged *Archimede* design.

Notes.—Begun as *Q* 108 of 1913 Programme. *Diane* of this type lost during the War. This type was derived from M. Simonot's designs for the larger *G. Zédé* class.

3 Bellone Class.

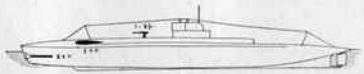


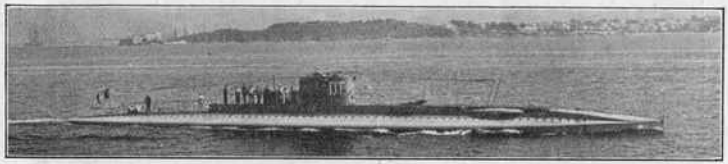
1920 *Photo.*

3 *Hutter* type: ***Bellone*** (Rochefort D.Y., 1914) and ***Hermione*** (Toulon D.Y., 1913), ***Gorgone*** (Toulon D.Y., 1915). Displacements, 484 tons *on surface*: 790 tons *submerged*. Dimensions: 196·8 × 17·7 × 12 feet. Machinery: 2 sets Sabathé-Diesel engines in first two, Sulzer Diesels in *Gorgone*, 1560 H.P. = 15·8 kts. *on surface*. *Submerged* speed, 9 kts. Endurance: *on surface*, 1300 miles at 12 kts., 115 miles at 5 kts. *submerged*. Armament: **1**—14 pdr. gun. **2**—18 inch bow torpedo tubes and **6**—18 inch torpedoes carried in external frames under superstructure. Complement, 29.

Notes.—Bellone begun as *Q 102* of 1912 Programme and completed 1917. *Hermione* (completed 1918) and *Gorgone* (completed 1916), begun as *Q 103* and *Q 104* of 1913 Programme, as a "Modified *Archimede*" design.

2 Fournier Class.



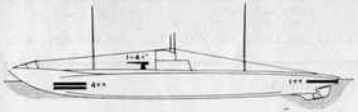


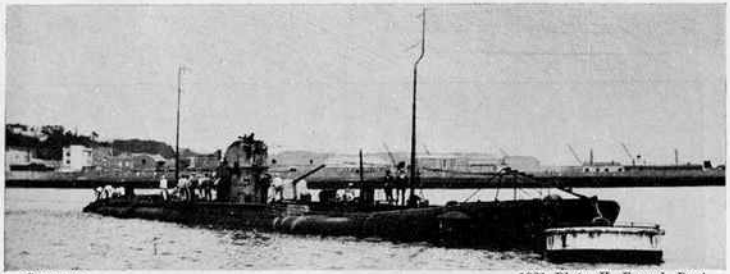
1924 *Photo.*

2 *Schneider-Laubeuf* type: ***O'Byrne*** (June, 1920), ***Henri Fournier*** (September, 1919), by Schneider, Chalon-sur-Saône. Displacements: 310 tons *on surface*, 513 tons *submerged*. Dimensions: *about* 173·9 × 15·4 × 8·2 feet. Machinery: 2 sets Schneider-Carels Diesel engines, 1000 B.H.P. = 14 kts. *on surface*. *Submerged* speed: 8½ kts. Armament: 1—3 pdr. Q.F. gun. Torpedo tubes: 2—18 inch bow and 2—18 inch torpedoes carried in frames under superstructure. Complement, 24.

Notes.—Originally ordered for Rumanian Navy but taken over under French 1917 Programme. Are double-hull boats. *Louis Dupetit-Thouars*, one of this type, condemned 1928.

3 Carissan Class (ex-German).





CARISSAN. 1921 *Photo, H. Freund, Brest.*

3 *ex-German "UB III" type*: ***Jean Corre*** (ex-German *UB 155*), ***Carissan*** (ex-German *UB 99*) and ***Trinité-Schillemans*** (ex-German *UB 94*), all completed 1918. Builders, Vulkan, Hamburg. Displacements: *on surface* 464 tons for *J. Corre*; *submerged* about 677 tons; other two boats are 464 tons *on surface*, 651 tons *submerged*. Dimensions: 181½ × 19½ × 12 feet. Periscope depth: 42 feet. Machinery: 2 sets 6 cyl. Diesel engines, B.H.P. 1100=14 kts.† *on surface*. *Submerged* speed: 8 kts.† Oil fuel: 35/71 tons. Lubricating oil: 8 tons. Endurance: 7000 miles at 8 kts. *on surface*; 45 miles at 4½ kts. *submerged*. Gun: 1—4·1 inch (Krupp "Ubts. n. Tpbts" model). Torpedo tubes: 5—19·7 inch (4 bow, 1 stern). Stowage for 10 torpedoes. Double-hull type. *Max.* dive: 245 feet. "Crash-dive" to 29.5 feet in 40 secs. Complement, 34.

Notes.—Were units of German *UB 48—136* and *UB 137—249* classes.

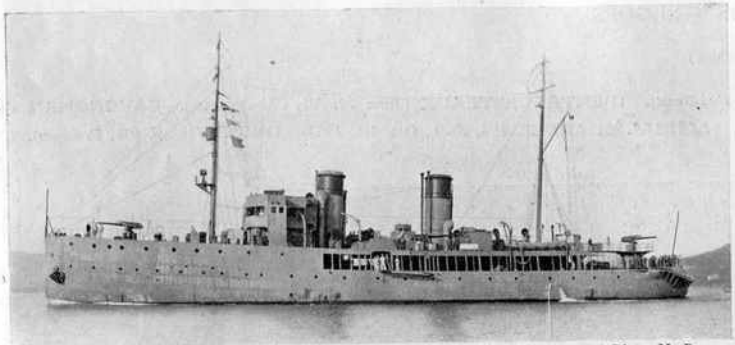
†*On trial*, after surrender to the Allied and U.S. Navies, some boats of this type could not exceed 13.7 kts. *on surface* and 7.5 kts. *submerged*.

2 Atalante II. Class.

2 *Hutter* type. ***Atalante II.*** (Toulon D.Y. 1913). ***Amphitrite II.*** (Rocheforte D.Y. 1914). Displacement: 384/497 tons. H.P. 1300/700 = 14·7/8 kts. Armament: 1—3 inch guns. Tubes: 2—18 inch in bow. 6—18 inch in frames. Complement 31.

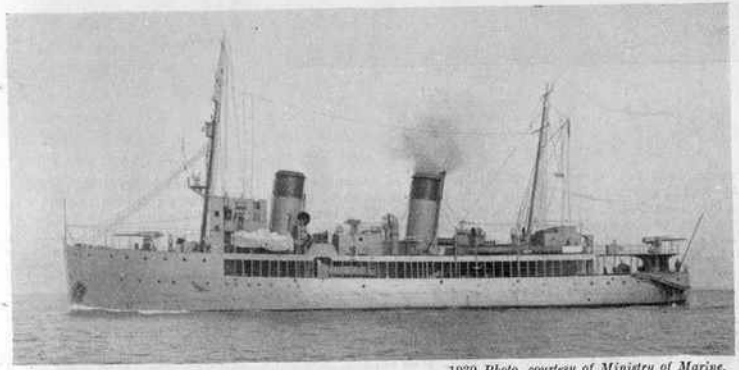
These boats are the surviving units of a class of 8. The *Ariane* was lost 1917. *Amarante* condemned 1925. *Arethuse*, *Andromaque*, 1926. *Artémis* 1927. *Astrée* 1928.

Mine Layers (*Mouilleurs de Mines*).



CASTOR. 1930 *Photo, M. Bar.*

CASTOR (ex-Russian Icebreaker *Kozma Minin*) (Swan Hunter, 1916). Displacement: 3,700 (*normal*) tons. Dimensions: 248×57×19 feet. 3 sets triple expansion engines. 6 S.E. boilers. I.H.P. 6,400=14·5 kts. Coal: 686 tons. Carries 368 mines. Armament: **3**—3·9″, **2**—37 m/m. Complement: 167. Radius: 4,500 miles at 10 kts.



POLLUX. 1930 *Photo, courtesy of Ministry of Marine.*

POLLUX (ex-Russian Icebreaker *Ilya Muromets*) (Swan Hunter, 1915). Displacement: 2,900 (*normal*) tons. Dimensions: 200 (*p.p.*), 211 (*o.a.*)×50½×20 feet. Triple expansion engines. 6 cylindrical boilers. I.H.P. 4,950=14 kts. 2 screws. Coal: 367 tons. Carries 236 mines. Armament: **3**—3·9″, **2**—37 m/m. Complement: 5—157. Radius: 2,300 at 8 kts., 1,470 miles at 14 kts.

Note.—Both these vessels were converted into Mine Layers by Lorient Dockyard, 1928-29.

Note.—Following Submarines are fitted as Mine Layers:—

Name.	No. of Mines carried.	Name.	No. of Mines carried.
Saphir class (6)	32	*René Audry*	38
Pierre Chailley	40	*Victor Réveille*	38
Maurice Callot	27		

All described on preceding pages. Several Destroyers are also fitted for minelaying.

Net Layer.

(No plan yet available).

LE GLADIATEUR. (1930 Programme). L'Orient. Laid down 1932.

Dimensions: 347·6×41·5×11·4 feet. / 106×12·7×3·5 *m.*

Displacement: 2,330 tons.

Guns:- 4=90 m/m

H.P.: 7000=20 kts.

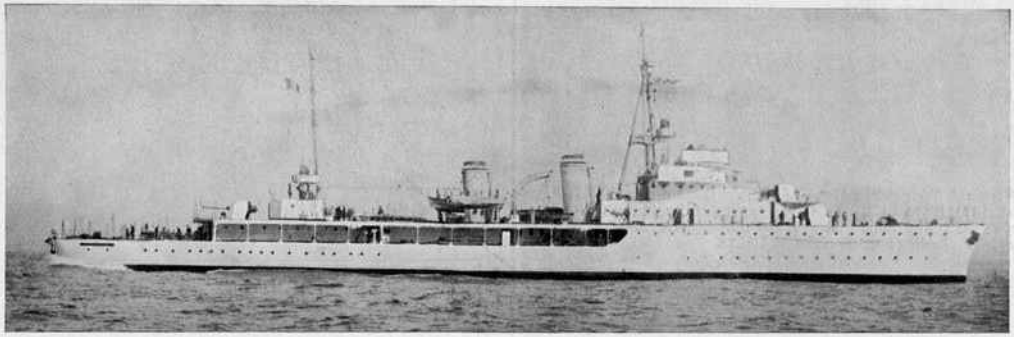
4 MG.

To be completed in 1934.

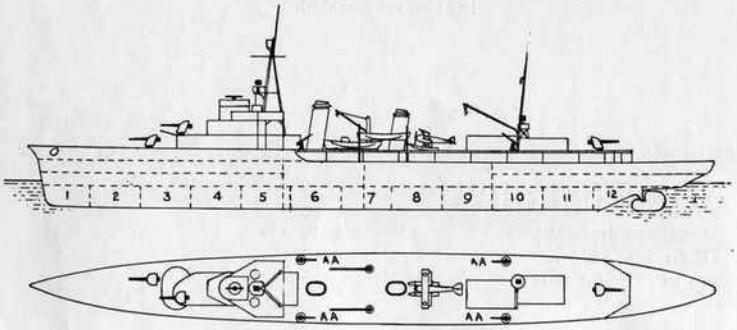
1927—1931 "AVISOS"—SLOOPS

(7 Avisos Coloniaux)

BOUGAINVILLE (Apl. 21, '31, *Soc. d'Exp. Gironde*). **DUMONT D'URVILLE** (Mar. 21, '31, *Ch. Sud-Ouest*). **D'ENTRECASTEAUX** (June 22, '31, *Ch. Provence*). **SAVORGNAN de BRAZZA** (June 18, '31, *Ch. Sud-Ouest*). **RIGAULT-de-GENOUILLY** (Sept. 18th, 1932, *Gironde*). **AMIRAL CHARNER** (*Ch. S.-O.*, Oct. 1st, 1932). **D'IBERVILLE** (*Ch. Provence*).



Dumont D'Urville. 1932 *Photo, Official.*



Note to plan: Forward guns are in centre-line and not staggered as shown.

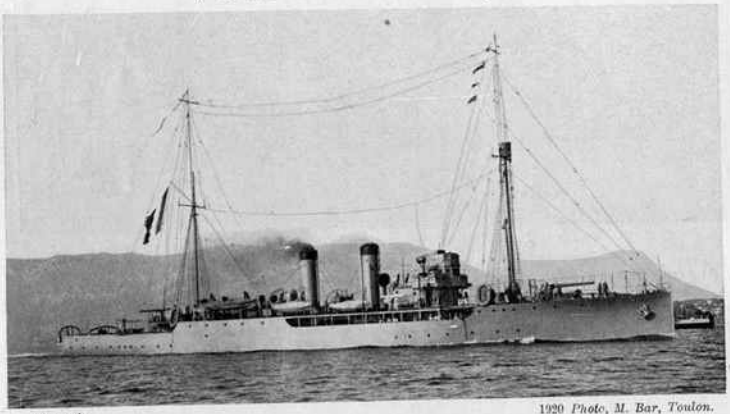
Displacement, 1968 tons *standard*; 2156 tons *normal*. Complement, 135. Dimensions: 334½ × 44½ × 12½ feet. Guns: **3**—5.5 inch, **4**—37 m/m. AA., **6** M.G. Machinery: 2 sets Diesel engines (see *Notes*). Designed S.H.P. 3200 = 15.5 kts. Radius: 9000 miles at 10 kts. Provision to be made for carrying a seaplane. Heavy oil, 60 tons. Gas oil, 220 tons. They are fitted as mine-layers, carrying 50 mines. The 5·5" gun is a new model firing an 80 lb. shell 26000 yds. Complement, 123.

Trials: Dumont d'Urville averaged 17·2 kts. *Sav. de Brazza* = 18·1 kts. *D'Entrecasteaux* = 17·5 kts.

Notes.—Two of these vessels were authorised in 1927. Two in 1928 and three in 1930. Builders of two are At. & Ch. du Sud-Ouest, Bordeaux. These two will have Sulzer Diesels, made by the At. & Ch. de la Loire and F. & Ch. de la Mediterranée, respectively. La Société d'Exploitation des Chantiers de la Gironde, Bordeaux, and Ch. & At. Provence, Port Bouc, are building one sloop each. Both will be engined with Burmeister & Wain Diesels manufactured by Schneider. Radius:—10,000 miles at 10 knots.

These vessels are designed for tropical service, with a special arrangement for circulation of cool air, and auxiliary plant is electrically driven through 3 Diesel groups 125 kws. each and 2 auxiliary petrol groups 22 kws. each. All will be fitted as flagships. Hulls, roofs and bridges are protected against bullets and splinters.

("ÉTOILE" or "STAR" Class—5 Ships.)



ANTARÉS. 1920 *Photo, M. Bar, Toulon.*

ALDÉBARAN (May, 1916) } Barclay, Curle, Whiteinch.
ALGOL (June, 1916) }

ALTAIR (July, 1916) } Wm. Hamilton, Port Glasgow.
ANTARÉS (1916) }

REGULUS (April, 1917) Barclay, Curle, Whiteinch.

Sloops. *Standard* displacement, 1121 tons. Dimensions: 255¼ × 33½ × 11-12½ feet. Guns: 2—5.5 inch, 2—14 pdr. (AA.) or 2—3 pdr. and 1 AA., 2 M.G. Are fitted as Fleet Sweeping Vessels. Designed I.H.P. 2500 = 17 kts. (All made 17.2-17.6 kts. on trials.) Machinery: 1 set, 4 cyl. triple expansion. Boilers: Cylindrical. 1 screw. Coal: 270 tons = 2400 miles at 12 kts. Complement, 103.

Notes.—These sloops are practically replicas of the British "Flower Class" Sloops, being built in pairs by British shipyards. *Rigel*, the companion boat to *Bellatrix* by Messrs. Henderson, lost during the War. All built under 1916 War Programme. *On trials* they made from 16.8 to 17.1 kts. with about 2675 H.P. All employed on Colonial Service. *Cassiopée* scrapped 1932. *Bellatrix*: 1933.

DUPERRÉ. 1921 *Photo, M. Bar, Toulon.*

"DUBOURDIEU" TYPE.—5 vessels.

DUBOURDIEU (April, 1918), **DUCHAFFAULT** (September, 1918), **DUPERRÉ** (December, 1918), **ENSEIGNE HENRY** (November, 1918), **DUCOUÉDIC** (April, 1919). *Standard* displacement, 452 tons. Dimensions: 210.8 (*o.a.*) × 26.2 × 8.75 feet (*max.* draught). Guns: 1—5.5 inch, 1—3.9 inch. S.H.P. 2000=17·4 kts. Machinery: 2 sets of Breguet de Wooch turbines. 2 screws. Boilers: 2 Du Temple-Guyot. Oil: 143 tons = 1985 miles at full speed. Complement, 72.

Notes.—Built under 1917-18 War Programme. Completed June, 1919—May, 1920. Sixth boat of this class, *Décrès*, cancelled. Originally rated as "Anti-Submarine Gunboats" (*Canonnières Contre Sous-marins*). In build they are very like *Arras* class. *Dubourdieu* is now tender to Boy Artificers Training Establishment at Lorient, and displaces 520 tons. *Ens. Henry* ex-*Dumont-D'Urville*.

1917 "AVISOS"—SLOOPS (CONVOY TYPE).

SCARPE. 1930 *Photo, M. Bar, Toulon.*

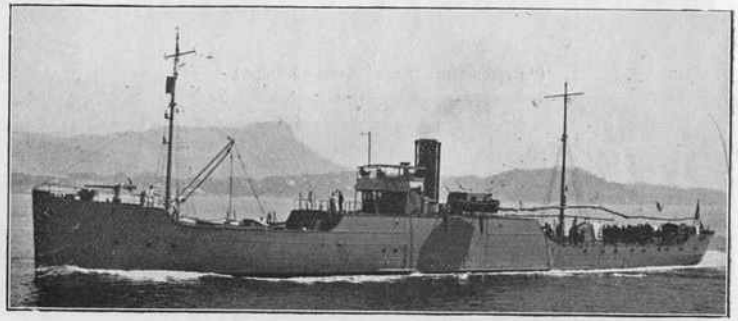
SUIPPE (straight stem); ANCRE has same appearance. 1930 *Photo.*

AILETTE (Brest D.Y., March, 1918) } 570 tons.
ESCAUT (Brest D.Y., March, 1918) }

ANCRE (Lorient D.Y., Jan., 1918) }
SCARPE (Lorient D.Y., Oct., 1917) } 705 tons.
SUIPPE (Lorient D.Y., April, 1918) }

Dimensions: first two, 229½ × 25½ × 8 feet; other three, 236½ × 27½ × 8 feet. Guns: **4**—3·9 inch, **1**—9 pdr. AA., **1** or **2** M.G. Designed H.P. 5000 = 21 kts. Machinery: 2 sets geared turbines. Boilers: two du Temple. 2 screws. Oil fuel: 140 to 145 tons = 4000 miles at 10 kts. Complement, 65.

Note.—Modifications of *Aisne, Marne, Meuse, &c.*, described on a later page. Externally they are disguised by varying appearances as mercantile vessels, like convoy sloop *Ville D' Ys* opposite. Built under 1917 War Programme. *Ancre* is tender to Navigation School.



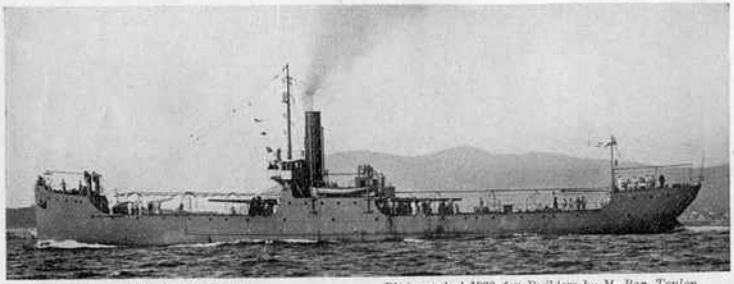
1924 *Photo, A. Dusseu, Toulon.*

AILETTE (ESCAUT same). The 3·9 inch guns are concealed within lidded ports at angles of superstructure. AA. gun on forecastle.

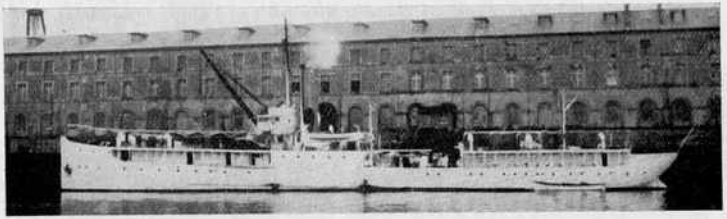
1921 *Photo, Lieut. R. Steen Steensen, R.D.N.*

VILLE D' YS (ex-*Andromède*), Swan, Hunter & Wigham Richardson, Wallsend-on-Tyne, June, 1917. Convoy sloop of 1191 tons. Dimensions: 255 feet 3 inches (*p.p.*) 276 feet (*o.a.*) × 35 feet × 12 feet 3 inches. Guns: **2**—5·5 inch, **2**—75 m/m. Designed I.H.P. 2500 = 17 kts. Machinery: 1 set 4-cyl. triple-exp. Boilers: 2-cyl. 1 Screw. Coal: 270 tons = 2400 miles at 12 kts. Complement, 103.

Note.—Generally same build as British convoy sloops. Built under 1916 War Programme. Begun for British Navy as *Andromeda* and turned over to French Navy. Now employed on Newfoundland fisheries service.



CALAIS (mast *before* funnel). *Photographed 1920 for Builders by M. Bar, Toulon.*



VITRY-LE-FRANÇOIS. 1931 *Photo, Capt. de C. M. Adam.*

COUCY. 1933 *Photo, R. Perkins, Esq.*

YPRES (mast *abaft* funnel). 1920 *Photo, by courtesy of "Le Yacht."*

("ARRAS" CLASS.—29 SHIPS.)

7 *built at Navy Yards :—*

ARRAS (July, 1918), **YPRES** (ex-*Dunkerque*) (July, 1918), **REIMS** (Nov., 1918), **LAFFAUX** (ex-*Verdun*) (Nov., 1918), all four built by Brest D.Y. **NANCY*** (Cherbourg D.Y., March, 1919), **BELFORT** (March, 1919), **BAPAUME** (Aug. 1918), both by Lorient D.Y.

21 *built by Private Yards :—*

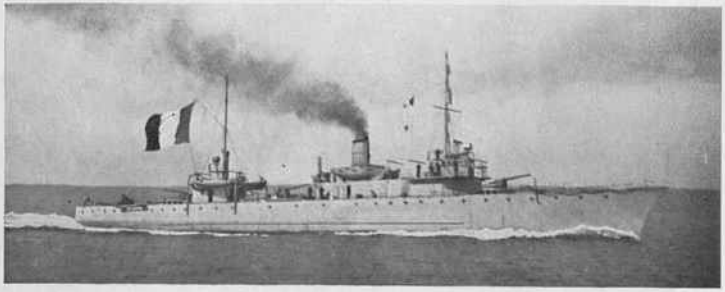
LASSIGNY (July, 1919) and **LES ÉPARGES** (September, 1919), both by Ch. de Bretagne, Nantes. **REMIREMONT*** (July, 1920) and **REVIGNY** (September, 1920), both by Ch. de la Gironde, Bordeaux. **TAHURE** (——, 1919) and **TOUL*** (April, 1919), both by Ch. de la Loire, St. Nazaire. **BACCARAT*** (Jan., 1921) and **BETHUNE*** (July, 1921), both by Ch. de Provence, Port du Bouc. **COUCY** (June, 1919), **ÉPINAL*** (August, 1919), **VAUQUOIS** (August, 1919), **VIMY*** (December, 1919) and **VITRY-LE-FRANÇOIS** (March, 1920) all five by Ch. de St. Nazaire, Penhoët. **AMIENS** (May, 1919), **CALAIS** (November, 1919), **CRAONNE** (January, 1920), **LIÉVIN** (March, 1920), all four by F. et C. de la Med., La Seyne. **EPERNAY** (September, 1919), **LUNÉVILLE** (Jan, 1920), **MONDEMENT*** (June, 1920), and **PÉRONNE** (March, 1920), all four by F. et C. de la Med., Graville.

Despatch and Anti-Submarine Vessels of 644 tons. Dimensions : 246 ft. 0 in. × 28 ft. 6 in. × 9 ft. 2 in. Guns : **2**—5.5 inch, **1**—14 pdr. AA., **2** M.G. Carry depth charges. Fitted with from two to four searchlights. Designed S.H.P. 5000 = 21 kts. Machinery : 2 sets Parsons (geared) turbines. 2 screws. Boilers : 2 Normand or Guyot du-Temple oil-burning (small tube). Fuel : 200 tons oil = Endurance : 1000 miles at 17 kts. 3000 at 11 kts. *Craonne, Liévin, Mondement, Béthune, Baccarat* burn coal (185 tons carried). Complement, about 110.

Notes.—5·5 inch guns reported to be M.1910 (and perhaps M.1916), but some* have been armed with 145 m/m. guns (army pattern) 5·5 inch have large degree of elevation ; *max.* range 17,000 metres. They are very roomy and comfortable ships for their size, and their high bows make them very dry in head seas. But with sea on the beam they are said to roll "like old boots" (*comme des véritables-sabots*), owing to heavy topweight of guns, superstructure, etc. Oil-burning boats can do 19-21 kts. on light draught in good weather, but in a seaway they drop down to 13 kts. Built under Programme VI and VII of 1917, and mostly completed 1919-21, though *Mondement* was not finished till 1922 and *Reims*, 1924. *Bar-le-Duc* wrecked and lost, December, 1920.

Vitry-le-François fitted as s/m. tender with armament of **2**—2·9" AA. only. *Montmirail* rayé, 1933.

1916 AVISOS 2e CLASSE—DESPATCH VESSELS.

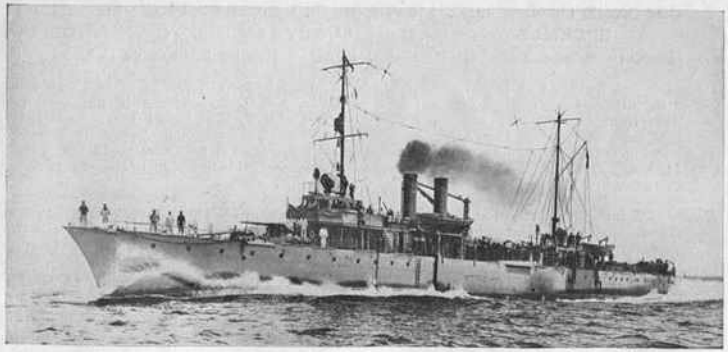


OISE (& SOMME). 1919 *Photo.*

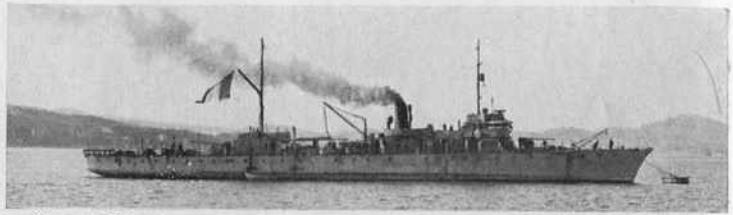
AISNE (Lorient D.Y., July, 1917), 682 tons. **SOMME** (Brest D.Y., March, 1917), 730 tons.

MARNE (Lorient D.Y., Nov., 1916), 717 tons. **OISE** (Brest D.Y., Oct., 1916), 650 tons.

MEUSE (Rochefort D.Y., June, 1917), 670 tons. **YSER** (Rochefort D.Y., Jan., 1917), 670 tons.



MARNE (& AISNE). 1919 *Photo.*

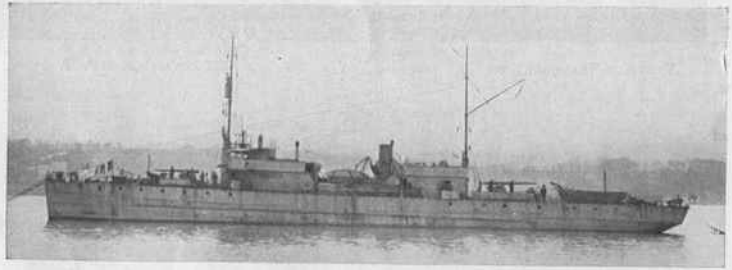


YSER (& MEUSE). 1920 *Photo, M. Bar, Toulon.*

Though the design of these Despatch Vessels is uniform, the latitude allowed to the building yards has resulted in differing appearances. Vessels built by same yard have the same appearance.

Despatch Vessels, displacing 575-600 tons. Dimensions: 256 (*o.a.*) × 26$\frac{5}{12}$† × 8$\frac{5}{8}$ feet. Armament: 4—3.9 inch, 1—65 m/m. in all. Designed I.H.P. 4000=20·5 kts. (5000=21 in *Aisne* and *Marne*). Machinery: 2 sets geared turbines. Boilers: 2 du Temple. 2 screws. Oil fuel: 135 tons, 145 tons in *Aisne* and *Marne* = 4000 miles at 10 kts. Complement, 107. All built under 1916 War Programme.

† 27¼ in *Aisne* and *Marne*.

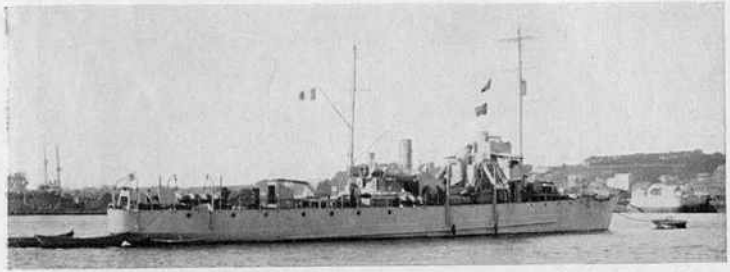


CONQUÉRANTE. Note that masts are stepped well to starboard of centre line.

CONQUÉRANTE (1917). Brest D.Y. 374 tons. Dimensions: *about* 211 × 22$\frac{7}{12}$ × 8¼ feet. Guns: 2—3·9 inch. Carry D.C. B.H.P. 2×750 = 17 kts. Machinery: 2 sets of 900 B.H.P. Sulzer-Diesel engines. Oil fuel: 30 tons. Complement, 54.

Vaillante scrapped 1932.

1916-17.



ENGAGEANTE only has dummy funnel. 1920 *Photo, H. Freund, Brest.*
Distinguished from *Conquérante* and *Vaillante* by yacht stem.

DILIGENTE (straight stem). No funnels. 1921 *Photo, Dussau, Toulon.*
Surveillante (yacht stem.)
Luronne „ „ and thin funnel.

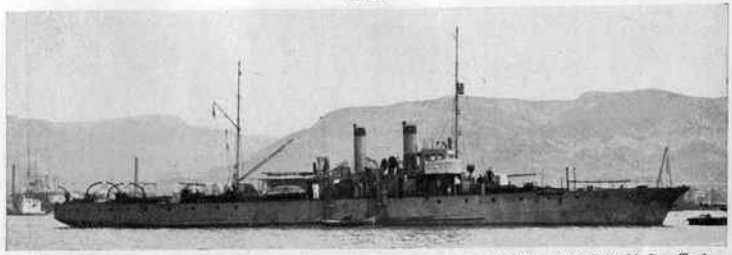
FRIPONNE type:—4 Diesel-engined boats.

DILIGENTE (Brest D.Y., 1916), **ENGAGEANTE** (Brest D.Y., 1917), **LURONNE** (Brest D.Y., 1917), **SURVEILLANTE** (Brest D.Y., 1916). Displacement: 315 tons, except *Luronne*, 265 tons. Dimensions: 199$\frac{8}{9}$ × 22$\frac{7}{12}$ × 8$\frac{1}{2}$ feet. Guns: 2—3.9 inch. Carry D.C. and may also be equipped as Minesweepers. B.H.P. 900* = 15 kts. Machinery: 2 sets 450* B.H.P. Sulzer*-Diesel engines. Oil: 30 tons = 3000 miles at 10 kts., 1600 miles at 15 kts. Complement, 57.

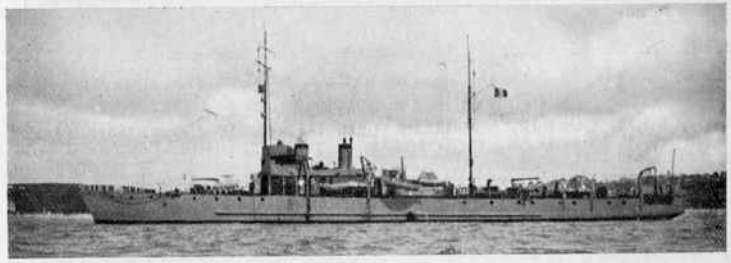
Notes.—Generally the same design as the *Ardent* type (steam-driven) boats in next column, but above four boats have Diesel engines. All built under 1916 War Programme, except *Luronne*, of 1917 Programme. *Chiffonne*, *Friponne*, *Impatiente* and *Mignonne* sold to Rumania, January, 1920, *Bouffonne* condemned.

**Luronne* has two Fiat type Diesel engines of 650 B.H.P., total H.P. 1300, which are reported to have given a speed of 13.8 kts. She is employed as tender to the training establishmen t for boy artificers at Lorient, and *Surveillante* as small Seaplane auxiliary.

1916.



GRACIEUSE. 1921 *Copyright Photo, M. Bar, Toulon.*



BATAILLEUSE. 1931 *Photo, M. H. le Masson.*

(ARDENT type—13 Steam-engined boats.)

AGILE (Brest D.Y., 1916).
ALERTE (Rochefort D.Y., 1916).
ARDENT (Brest D.Y., 1916).
AUDACIEUSE (Port de Bouc, 1917).
BATAILLEUSE (Port de Bouc, 1917).
CAPRICIEUSE (Nantes, 1916).
DÉDAIGNEUSE (Bordeaux, 1916).
ETOURDI (Lorient D.Y., 1916).
GRACIEUSE (Lorient D.Y., 1916).
IMPÉTUEUSE (Ch. de la Gironde, Bordeaux, 1917).
INCONSTANT (Brest D.Y., 1916).
SANS SOUCI (Lorient D.Y., 1916).
TAPAGEUSE (Port de Bouc, 1916).

Displacement: 265-310 tons. Dimensions: 197$\frac{1}{9}$ × 22$\frac{7}{12}$ × 8$\frac{1}{2}$ feet. Guns: 2—3.9 inch (and 1 small AA. in some). Carry D.C. Designed I.H.P. 1800-1200 = 17 to 15 kts. Machinery: Reciprocating. Boilers: Various water-tube types. Fuel: 85 tons coal = 3000 miles at 10 kts., 1600 miles at full speed. Complement, 65.

Notes.—Note that masts are stepped well to starboard of the centre-line. *Moqueuse* wrecked, 1923. *Curieuse* condemned, 1926. *Belliqueuse* and *Emporté*, 1927. *Malicieuse* and *Éveillé* 1932.

Minesweepers (*Dragueurs de Mines*).

GRANIT. (Funnel now raised). 1926 *Photo, M. Eav, Toulon.*

GRANIT CLASS—4 Steam-engined boats.

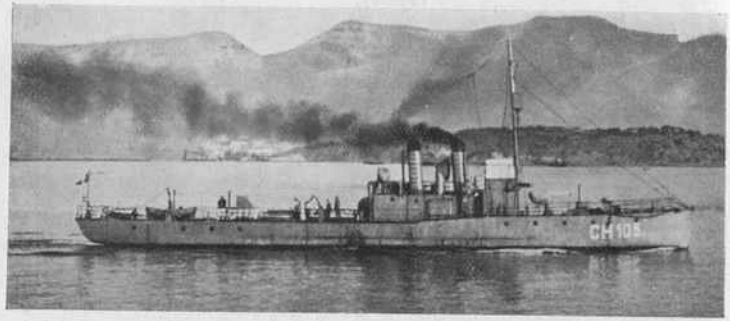
GRANIT, MICA, QUARTZ, MEULIERE (1918). 354 tons. Dimensions: 180 × 25 × 6½ feet. H.P. 550 = 12 kts. Guns: **1**—65 m/m. Coal: 73—90 tons. Complement, 63. *Porphyre* scrapped 1932.

Submarine Chasers.

CH 1. 1933 *Photo. M. H. le Masson.*

4 boats. A. and Ch. Bretagne (Nantes). **CH 1, CH 2, CH 3, CH 4.** 150 tons. Dimensions: 157·4×17·4×5·2 feet. Guns: **1**—75 m/m. **2** M.G. Depth charges. Diesels. **2**—1,050 H.P.=20 kts. CH 1: 3=Sulzer. CH 2: 4=M.A.N. Are fitted for mine-sweeping. On Trials CH 1 averaged 22·5 kts.

Submarine Chasers (*continued.*)



C 105. 1930 *Photo.*

Note.—Funnels are slightly staggered, the foremost being to port and after one to starboard of the centre-line.

15 *Normand type* boats: ***C 102—C 106*** (Normand, Le Havre, 1918-21). ***C 107—C 116*** (respective builders unknown).* 133 tons. Dimensions: 136⅝ (*p.p.*), 142 (*o.a.*) × 17½ × 4½ feet (draught amidships), 7½ feet (draught below rudder support). Guns: 1—75 mm., **2** M.G. Designed I.H.P. 1300 = 16.5 kts. Triple expansion engines. 2 Normand boilers. Coal: 24 tons, except in *C 107, 110, 111, 113-115* all 28 tons. Complement, 32. Contract for 2 other boats with Normand cancelled 1918. *C 101* swamped and sunk off Spanish Coast, December 1920.

*Built by Chantiers de la Loire, Nantes, Chantiers Dubigeon, Nantes, and Chantiers Normand, Le Havre.

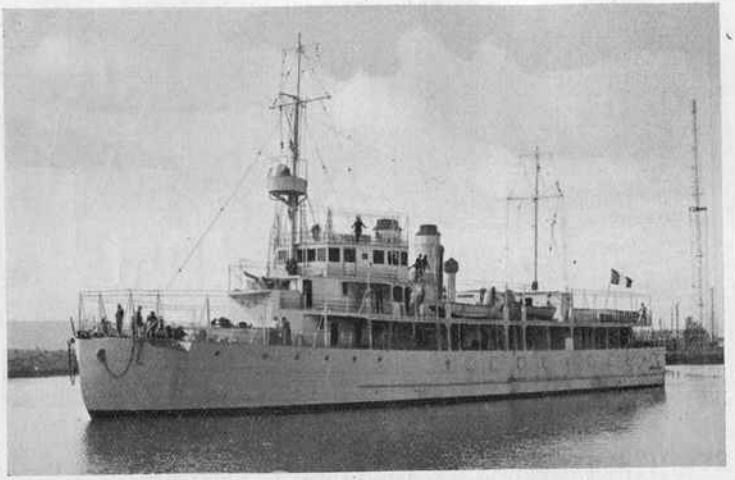
Note.—*C 111 and C 112* have been given respective names of *Capitaine Bourdais* and *Avalanche* while serving in Indo-China.

C 60. 1920 *Photo, H. Freund, Brest.*

23—*100 foot* type: Numbered between **C 25,** and **C 98.** Built by U.S. Navy Yards and smaller shipbuilding firms, 1917–18, for U.S. Navy as *SC5—SC404*, but contracts transferred to French Government. *Designed* displacement, 54 tons; *actual* displacement, 77 tons. Dimensions: 105 ft. (*p.p.*), 110 ft. (*o.a.*) × 14 ft. 8⅝ in. × 5 ft. 5½ in. (*mean* hull draught). Machinery: 3 sets of 220 B.H.P. Standard petrol motors, totalling 660 B.H.P.=17 kts. Petrol: 2400 gallons=900 miles at 10 kts. Armament: **1**—75 m/m (14 pdr.) field gun converted to naval mounting, but many have no guns now, and some have one of smaller calibre. Carry depth charges. Complement, 26.

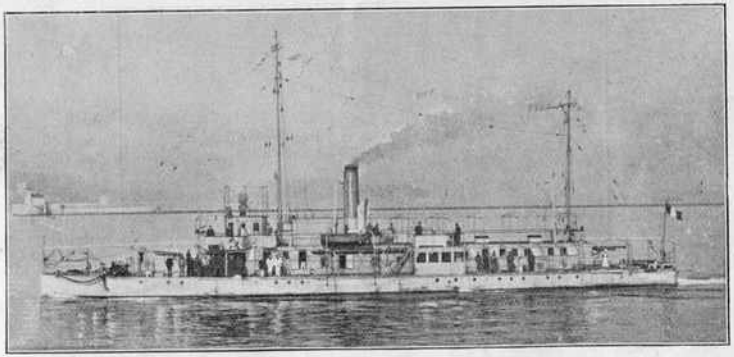
C.96 lost off Aran, Dec. '31. *C.53, 57, 65, 77*, stricken 1933.

River Gunboats (*Canonnières Fluviales*).



FRANCIS-GARNIER. 1930 *Photo, by favour of M. Henri le Masson.*

FRANCIS-GARNIER (Dec. 7, 1927). River Gunboat, for Lower Yangtse, ordered 1926 from Chantiers Navals Français, Blainville. Displacement, 630 tons. Complement, 103. Dimensions: 196¾ × 32¾ × 6 feet. Guns: 2—4 inch, 1—3 inch AA, 2—2 pdr. 4 M.G. 2 sets triple expansion, H.P. 3200 = 15 kts. 2 Du Temple boilers. Oil fuel: 100 tons. Completed in 1929.



VIGILANTE 1924 *Photo, A. Dussau, Toulon.*

ARGUS, VIGILANTE (1922, Toulon D.Y). 218 tons. Dimensions: *about* 163½ × 25 × 2½ feet. Guns: 2—75 mm. 2—37 m/m. 4 M.G. I.H.P. 550 = 12 kts. 2 screws and 2 boilers. Bullet-proof plating over conning position and W/T. cabinet. Ammunition carried: 300 rounds per 14 pdr. and 50,000 cartridges.

River Gunboats—*continued.*

BALNY. *Photo added 1927, by favour of "Revue Maritime."*

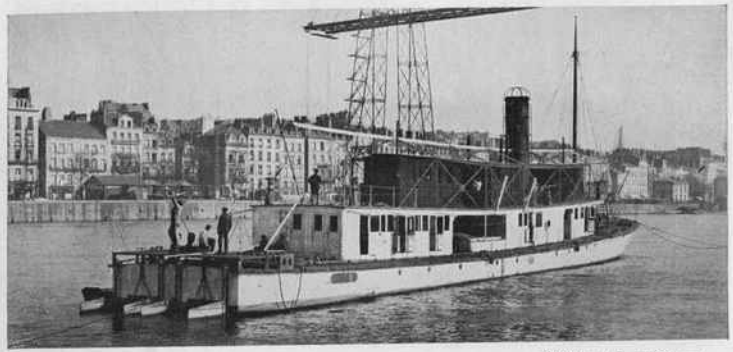
BALNY (1920). Built by Chantiers de Bretagne, Nantes. 196 tons. Dimensions: 167½ × 23 × 3½ feet. H.P., 800 = 13·5 kts. Guns: 1—14 pdr., 2—1 pdr., 4 M.G. 2 Fouché w.t. boilers. Coal: 45 tons. Complement, 60.

LA GRANDIÈRE. *Photo added 1927, by favour of "Revue Maritime."*

LA GRANDIÈRE (built at Brest D.Y.). Completed, 1923. 36 tons. Dimensions: 90·2 (*o.a.*) × 16·4 × 1·6 feet. Guns: 1—37 m/m, 2 M.G. Standard petrol motor 220 B.H.P. = 12 kts. Serves as tender to *Balny* and *D. de Lagrée* for Upper Yangtse. Is said to be very expensive to run, as she consumes petrol in large quantities. Fuel, 3 tons petrol.

RIVER GUNBOATS.

River Gunboats—*continued.*



1920 *Photo, Ch. de Bretagne.*

DOUDART DE LAGRÉE (1909). 265 tons. Dimensions: 167½ × 22 × 3½ feet. Guns: 1—14 pdr. (field type), 2—37mm., 4 M.G. H.P. 920=14 kts. Fouché w.t. boilers. Coal: 50 tons. Complement, 60. Built by Chantiers de Bretagne, Nantes.

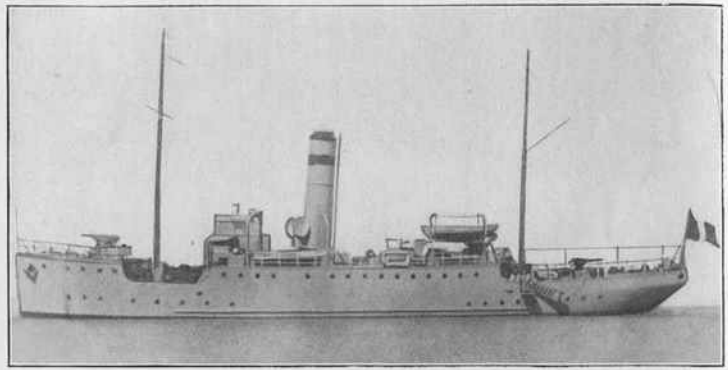
Photo wanted.

MYTHO. TOURANE (Saigon 1933).

Displacement: 107 tons.
Guns: 1—2·9 inch, 1—32 m/m. 1 Mortar 2 M.G.
Machinery: 2 Diesels of 150 H.P.—10 kts.
Radius: 560 miles at 10 kts.
Complement 16.

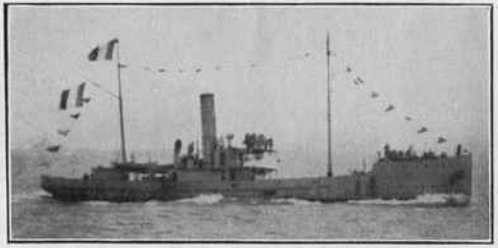
Note: Avalanche and *Commdt. Bourdais* listed in "Return of Fleets" as River Gunboats are Submarine Chasers, C 111 and C 112 (see p. 214).

Fishery Protection.



Q. ROOSEVELT. *(On North Sea Fishery Protection Service.)* 1927 *Photo.*

QUENTIN ROOSEVELT (ex-*Flamant*, Rochefort D.Y., December, 1916). Despatch Vessel of 585 tons. Dimensions: 154 × 28 × 13 feet. Guns: 1—14 pdr., 1—3 pdr. I.H.P. 1100 = 13 kts. Coal: 100 tons = 1500 miles at 10 kts. Complement, 53. Was begun 1913, stopped 1914-17, completed April, 1918.

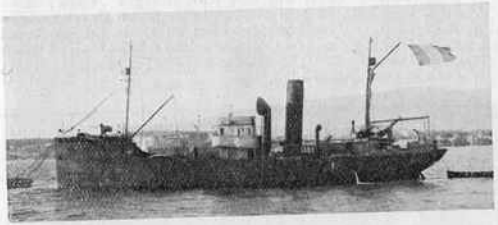


ESTAFETTE (1918), **SENTINELLE** (1920). 460 tons. Dimensions: 142½×24×12½ feet. Guns: 1—3 pdr. I.H.P. 430=10 kts. Complement, 25. Both for Fisheries Protection.

Patrol Vessels.

TROUPIER. 1921 *Photo, M. Bar, Toulon.*

TROUPIER (1919). 340 tons. Dimensions: 187 × 26 × 6½ feet. Complement, 23. Sulzer-Diesel engines. B.H.P. 420 = 12 kts. Guns: 1—3 pdr. (On Fishery Protection duty.)



PASSEREAU II, FAUVETTE II (1916). 315 tons. Dimensions as *Troupier*, but *Fauvette* draws only 6 ft. I.H.P. 560 = 10 kts. Coal: 120 tons. Complement, 23.

Photo wanted.

PERCE-NEIGE (1918). 80 tons. Dimensions: 75 × 15 × 4½ feet. Guns: 1—14 pdr., 2—1 pdr. Oil engines. B.H.P. 325 = 13.5 kts.

PRIMEVÈRE (1912). 490 tons. Dimensions: 116 × 22 × 14 feet. H.P. 450 = 8·5 kts. 1 screw. Coal: 30 tons.

13 Coastal Motor Boats.

(*Vedettes rapides.*)

B1—B7 TYPE. 1930 *Photo, "Flottes de Combat."*

VTA 1 (1921). Speed: 34 kts. 1 Torpedo, 18".

VTB 1 (1922). 2 motors. 36 kts. 2 Torpedoes.

VTA 2 (1929). H.P. 500 = 37 kts. 1 Torpedo.

VTA 3. H.P. 500 = 36 kts. 1 Torpedo.

VTB 2—**B** 7. H.P. 1,000 = 39 kts. 2 Torpedoes. (Trials = 44 kts.)

VTB 8—**B** 10 (A. C. Loire and Silbur Meulan). H.P. 2,000 = 46 kts. (52 kts. on trials). 2—18" torpedoes fired from twin closed Tubes, stern first.

Surveying Ships.

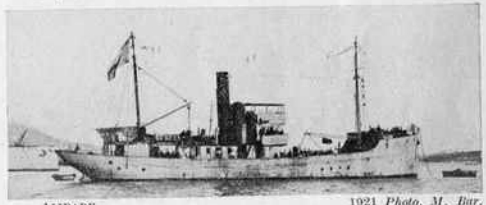
ADMIRAL MOUCHEZ ordered 1934. Cherbourg D.Y. 719 tons. Length 203·4 ft. Sulzer, B.H.P. 800 = 12 kts.

Surveying Ships—*continued.*

Commissioned for the six months April—November, and reduced to Reserve during other six months of the year.

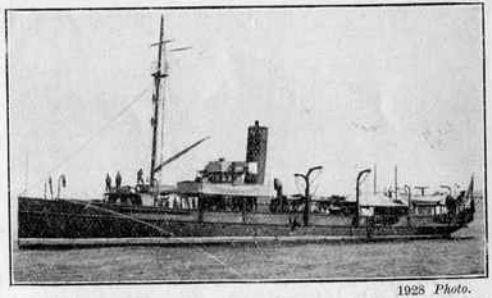
BEAUTEMPS-BEAUPRÉ. 1921 *Photo, M. Bar.*

BEAUTEMPS-BEAUPRÉ (ex-*D'Estaing*) and **LA PÉROUSE** both launched 21st November, 1919. 781 tons. Dimensions: 196.8 (*p.p.*) × 28.9 × 18 feet. Guns: 1—3 pdr. AA. in *La. P.*, 1—14 pdr. in *B-B.* 2 Breguet turbines. H.P. 2000 = 17·5 kts. 2 w.t. boilers. Oil: 143 tons. Complement, 104. Ex-Navy Transports, completed as Surveying Ships, 1920. Both built at Brest D.Y.



ALIDADE. 1921 *Photo, M. Bar.*

ASTROLABE (ex-*Mauviette*), **GASTON RIVIER** (ex-*Ortolan*), **OCTANT** (ex-*Pivert*) 460 tons. Length, 142¾ feet. Draught, 12¾ feet. I.H.P. 450 = 10 kts. Coal: 120 tons. Complement, 32.



1928 *Photo.*

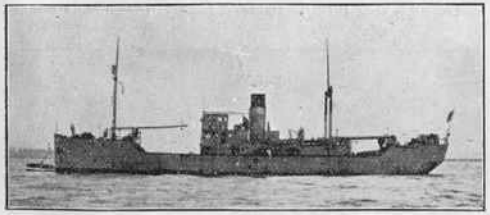
UTILE (1894). Ex-Tug of 410 tons. Length, 164 feet. I.H.P. 700 = 13 kts. Guns: 1—3 pdr. Complement, 56.

CHIMÈRE (ex-*Zelée*, ex-*Huron*) (1901). Ex-Tug of 613 tons. I.H.P. 880 = 14 kts.

Transports (*Transports*), Supply Ships (*Soutiens d'Escadre*) and Refrigerator Ships (*Navires Frigorifiques*).

CHAMPLAIN (April, 1919), **JACQUES COEUR** (April, 1919), **ALLIER** (ex *Primauguet*, April, 1919), all three by Brest D.Y. 521 tons. 170 × 32·4 × 13·4 feet. H.P. 1,100 = 10 kts. Coal, 80 tons. "Allier" 1—75 mm. gun.

COËTLOGON. 1930 *Photo, M. Bar.*



FORFAIT. 1927 *Photo, H. Freund.*

COËTLOGON (June, 1919), **FORFAIT** (1920), **HAMELIN*** (1920), **ALFRED DE COURCY*** (ex-*Adour*,) (ex *Lamotte-Picquet*, 1920), by Ch. de Bretagne, Nantes. 622 tons. Dims.: 167.2 (*o.a.*) × 25.9 × 14 feet. Guns: 2—3.9 inch, 1 M.G. I.H.P. 1,200 = 12 kts. Triple expansion engines. 1 screw. 2 cylindrical boilers. Coal: 80 tons. 850 miles endurance.

* Usually employed as seaplane tender.

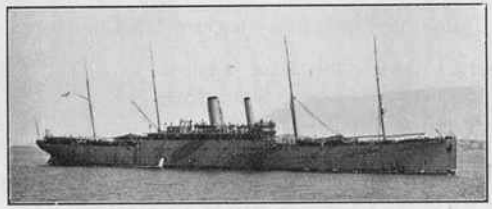
Transports, Supply Ships, etc.—*continued.*

JEANNE ET GENEVIÈVE (1917). Length, 147½ feet. Draught, 10¼ feet. 620 tons *gross*.

LOIRET (ex-S.S. *Paris*, purchased 1900). 1088 tons. Guns: 1—9 pdr. H.P. 1060 = 11 kts. Coal: 193 tons.

GOLO (F. C. Gironde, 1932), 2239 tons.

Fleet Repair Ship (*Navire-Atelier*).



1921 *Photo, M. Bar, Toulon.*

VULCAIN (ex-Russian *Kronstadt*, 1894). 9,840 tons. Dimensions: 460 × 53 × 23 feet. I.H.P 4,100 = 12 kts. Coal: 1000 tons. Complement, 406. Took refuge at Bizerta with other ships of the Russian Black Sea Fleet under Gen. Baron Wrangel, 1920. Purchased by France, 1921, and refitted to replace *Foudre*, condemned 1921.

Submarine Depot Ship.

Photo, 1932, *Official.*

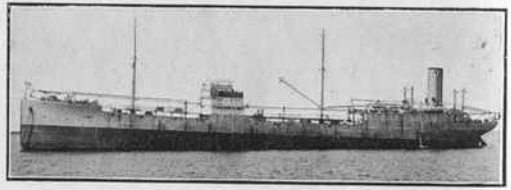
JULES VERNE. (Feb. 3rd, '31). Displacement: 5,720 tons. Dims.: 377½ × 59 × 19 feet. Diesel engines, S.H.P. 2 × 3,000 = 16 kts.—4 auxiliary groups of 1,200 H.P. each of chaléassière model. 2 screws. Guns: 4—3·5″ AA., 4—37 m/m. AA. 9 M.G. Complement: 24 + 473.

Note.—Diesels in this ship are of similar design to submarine engines.

Oilers (*Pétroliers*).

LE MÉKONG. 1929 *Photo by favour of M. Henri le Masson.*

LE MÉKONG, by Ch. & At. de St. Nazaire (Penhoët) (Aug. 31, 1928), **LE NIGER,** by Ch. & At. Maritimes du Sud-Ouest, Bordeaux (March 14th, 1930) and 2 more laid down 1929. Displacement: 13,130 tons *full load*. Dimensions: 436¼ (*p.p.*), 455¼ (*o.a.*) × 62 × 26½ feet *max.* draught. Guns: 2—4 inch, 2—2 pdr. 2 sets Burmeister & Wain Diesel engines. H.P. 6600 = 13.5 kts. (exceeded on trials). Capacity of tanks: 33,900 cubic feet. Deadweight: 9600 tons, of which oil fuel absorbs 9000; distilled water, 500; lubricating oil, 100, both in commission 1930.



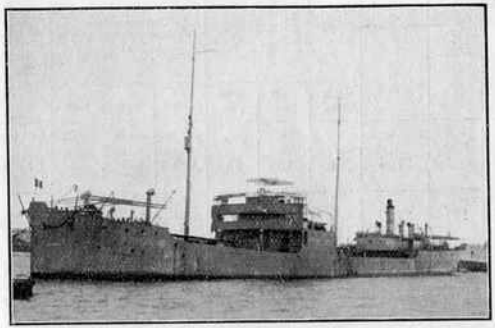
1928 *Photo, R. Perkins, Esq.*

LE LOING (At. & Ch. de la Seine Maritime, Le Trait, 4th April, 1927). 9900 tons. Guns: 2—4 inch, 2—2 pdr. AA. Dimensions: 403½ × 50½ × 25 feet. 2 sets 4-cycle single-acting Diesel engines by Burmeister & Wain. H.P. 4100 = 13.5 kts. (exceeded on trials). Carries 5900 tons oil. Constructed on Isherwood system.

AUBE. 1921 *Photo, H. Freund.*

AUBE (July, 1920), **DURANCE** (1920), **NIÈVRE** (March, 1921), **RANCE** (July, 1921), all by Lorient D.Y. 2500 tons. Dimensions: 242.8 (*o.a.*) × 38 × 15.7 feet. S.H.P. 1000 = 10 kts. Breguet turbines. Carry 1500 tons oil. Endurance: 1580 miles at 10 kts. Complement, 70.

Oilers (*Petroliers*).—*continued.*



1927 *Photo, H. Freund.*

LOIRE (ex-*Bakou*), Nikolaieff, 1915. Displacement, 12,200 tons. 5400 tons *gross*. Dimensions: 400 × 53 × 26 feet. Oil engines. H.P. 3400 = 10 kts. Carries 8000 tons oil. (Taken over from Gen. Wrangel at Bizerta.)

1921 *Photo, H. Freund.*

DORDOGNE (ex-*San Isidoro*, Armstrong, 1914). Displacement, 24,000 tons. 15,160 tons D.W. Carries 13,000 tons oil. Dimensions: 530 × 66¼ × 28 feet. H.P. 4150 = 11.7 kts.

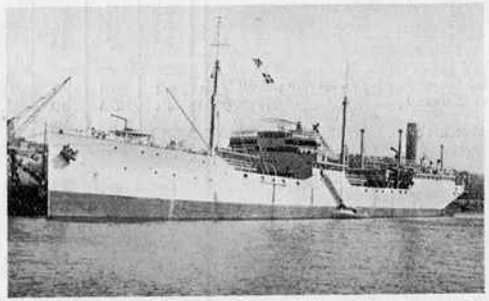
1920 *Photo, H. Freund.*

GARONNE (1911). 10,800 tons. H.P. 2600 = 13 kts. Carries 7000 tons oil as cargo. Complement, 65.

Oilers (*Pétroliers*).—*continued.*

1931 *Photo.*

RHÔNE (1910) 7830 tons. H.P. 2100 = 11 kts. Carries 4500 tons oil as cargo. Complement, 57.



1932 *Photo, Capt. M. Adam.*

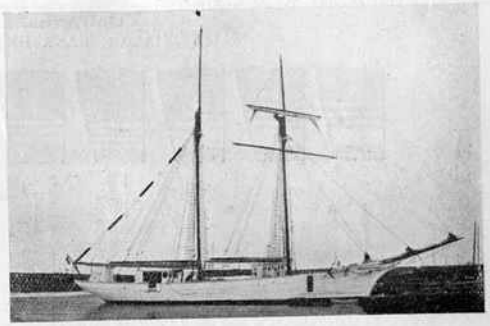
VAR, ELORN (Both 1930–31). Displ., 5,482 tons. Full load, 15,150 tons. Length, 436 feet. 2 B. and W. Diesels. H.P. 4,850 = 13·9 kts. Complement, 6—69. Guns: **4**—3·9 inch. **2**—37 mm. Capacity: 9,600 tons.

Armed Yacht.

1921 *Photo by courtesy of Lieut. de V. Thery.*

DIANA (1896). 1400 tons. Dimensions 256 × 27¾ × 15¾ feet. Guns: **2**—14 pdr. I.H.P. 900 = 10 kts. Coal: 200 tons. Complement, 65. Serves as Yacht for the Senior French Naval Officer in the Levant.

Sailing Ships.



1932 *Photo, Capt. M. Adam.*

LA BELLE-POULE. L'ÉTOILE for cadet training Ch. Nav. & Normande (Fecamp) 1932.
Dimensions: 105 (*o.a.*) × 23·5 × 11·4 feet. Displacement: 215 tons.
Accommodation for 3 officers, 30 cadets, 5 petty officers, 12 seamen.
Machinery: 120 H.P. Sulzer engines = 6 kts.

ZELÉE (purchased 1931). 122 tons. Length 98 feet.
Machinery: **2**—40 H.P. oil engines = ? kts.
Guns: **1**—3 pdr.
For service in Oceania and Tahiti.

MUTIN (1883). 51 tons.

RAILLEUR (1884). 52 tons.

GERMANY

Minister of Defence: General Von Blomberg
Chief of Admiralty: Admiral Dr. N. C. Räder.
Naval Attaché: Capt. E. Wassner.

Uniforms.

INSIGNIA OF RANK ON SLEEVES

NOTE.—In above sketch, a *star* should replace devices which appear in the 5 junior ranks.

Uniforms and distinguishing marks of rank are the same for officers of all branches of the service; but in place of the star on the sleeve, which distinguishes the military branch, there is worn by:

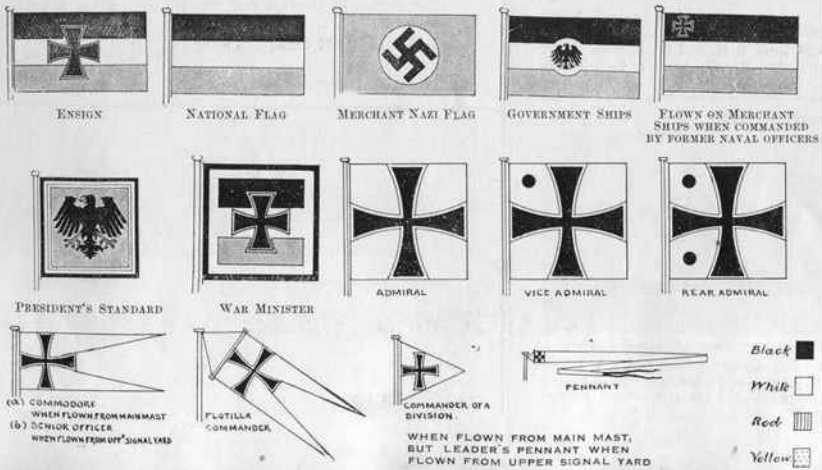
Engineer Officers, a pinion wheel
Medical Officers, the rod of Æsculapius } As in sketch above.
Accountant Officers, an eagle

Officers of the legal and administrative sections of the Naval Department, when attached to the staff of a command, or acting as advisers on questions concerning naval accounts in the Ministry for Defence of the State, wear *silver* stripes on their sleeves, with a silver eagle above, and silver facings to their uniforms.

The difference between a *Kapitän zur See* and a *Fregattenkapitän* is indicated by stars on the shoulder straps.

Kommodores wear the same sleeve stripes as a *Kapitän zur See*, but with the cords and shoulder bands of a Flag Officer.

Flags.



Naval Guns.

Calibre	Usual Naval Designation.	Length in cals.	Date of Model.	Weight of Gun.	Weight of A.P. shot.	Initial Velocity.	Maximum penetration, direct impact against N.C. at 9000 yds.	Maximum penetration, direct impact against N.C. at 6000 yds.	Maximum penetration, direct impact against N.C. at 3000 yds.	Danger space against average ships at 10,000	Danger space against average ships at 5000	Danger space against average ships at 3000	Approximate Muzzle Energy.
inch.	c/m.			tons.	lbs.	foot-secs.	in.	in.	in.	yards	yards.	yards.	foot tons
11	*28*	...	'28	...	670	...	...	..	...	...	...	...	...
11	*28*	40	'01	32·2	661·4	2756	6	10	14	150	450	740	31,600
6·7	*17*	40	'01	7·5	151·5	2756	...	3	5	80	240	460	8,275
5·9	*15*	50	...	5·5	101·4	3084	...	...	...	...	...	...	6,690
5.9	*15*	45	'09	5		2920	...	...	5	...	200	420	5,990
5.9	*15*	40	'01	4·9		2756	...	...	3½	..	140	350	5,335
4·1	*10·5*	45	'16	...	38·2	...	...	...	...	...	...	...	...
4·1	*10·5*	40	...	1·7	35·2	2756	..	...	...	...	...	...	1,860

Brass cartridge cases to all guns.

Lesser guns: 3.4 inch (88 m/m) firing 22 lb. projectiles in modern and 15 lb. in old models; also 2 inch (4 pdr.) of 55 and shorter calibres.

AA. guns: 6 inch, 4·1 inch, 3·4 inch War Marks on H.A. mounts ("Flak").

Projectiles: Guns of 11 inch and over fire A.P., Ersatz A.P., H.E., and common shell.

The 1899 and later models have the recoil utilized to return the gun to firing position for pieces over 6 inch. In 6 in. springs are employed. German guns have a lower muzzle pressure than normally obtains.

11 inch, 40 cal., M. '01 in *Deutschland* and *Braunschweig* classes.

Personnel.

(a) **TOTAL PERMITTED ESTABLISHMENT**, Active List, Officers and Men, inclusive of Administrative Staffs ashore, Shore Establishments, Schools, Coastal Defence Units and Signalling Companies, 1,500 Officers + 13,500 Men = 15,000. All officers and men to enter as volunteers: Officers to serve for 25 years, men for 12 years.

(b) Total personnel, 1933, 1,104 officers; 13,896 men.

Colour of Ships.

Big Ships: Light grey all over.
Torpedo craft: Dark Grey.

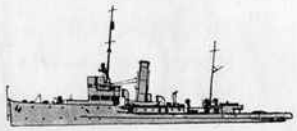
Mercantile Marine.

(From "Lloyd's Register," 1933 figures.)
2,071 vessels of 3,887,987 gross tonnage.

Navy Estimates.

1930-31, 191,855,500 marks
1931-32, 189 355 550 ,,
1932-33, 187,339,700 ,,

ZIETEN.

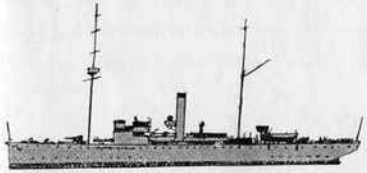


"M" Mine Sweepers.

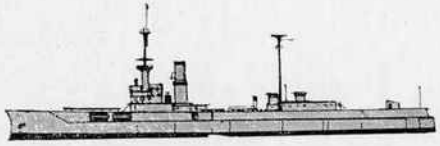
FUCHS

NORDSEE.

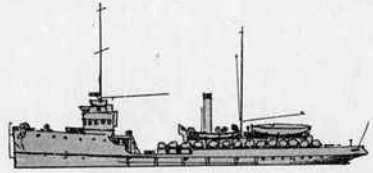
FRAUENLOB.



METEOR.

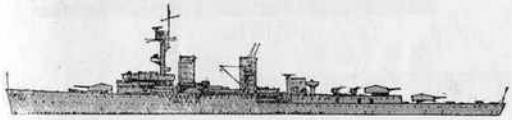


ZÄHRINGEN.



MT. 1. 2.

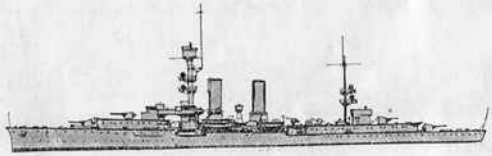
ELBE WESER.



KÖNIGSBERG.
KARLSRUHE.
KÖLN.

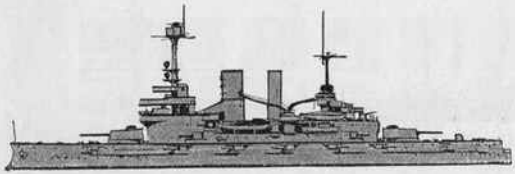
LEIPZIG.

DEUTSCHLAND

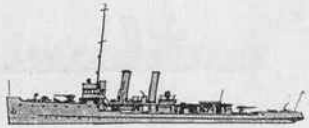


EMDEN.

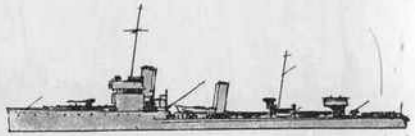
BREMSE.



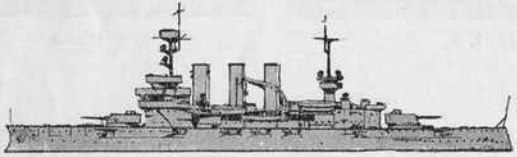
SCHLESIEN.
SCHLESWIG-HOLSTEIN



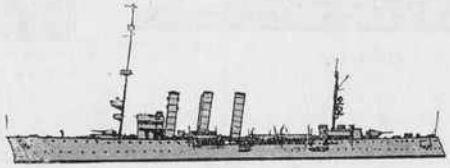
DRACHE.



T 185.

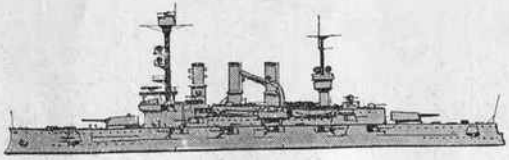


HESSEN.



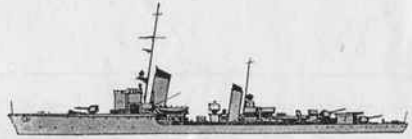
BERLIN.

T 151—158.



HANNOVER.

G 7. 8. 9. 11
T 23, T 190 and 196 very similar.



MÖWE *class*.
WOLF „

Battleship—Special Note.—Establishment permitted by Treaty: 6 in Commission, 2 in Reserve. Age Limit: 20 years. Not to be replaced by ships of more than 10,000 standard tons displacement.

DEUTSCHLAND (Laid down at Deutsche Werke, Kiel, February 5th, 1929). Launched May 19th, 1931. To be completed Spring 1933.

ADMIRAL SCHEER (Laid down Wilhelmshaven, June 25th, 1931). Launched April, 1st, 1932. To be completed 1934.

Ersatz *BRAUNSCHWEIG* (commenced Oct. 1, 1932).

Ersatz *ELSASS* (projected. To be commenced 1934).

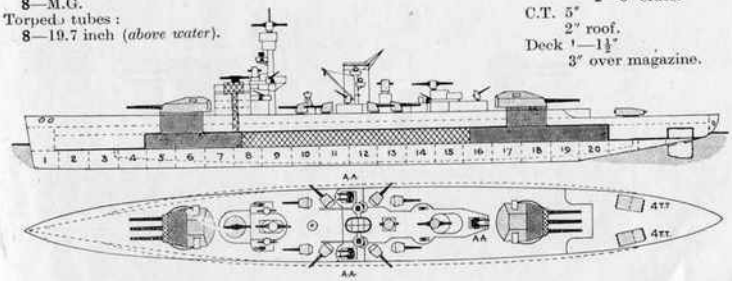
Standard displacement, 10,000 tons. Complement 711.

Length, 609¼ (*o.a.*) feet. 593 feet (*w.l.*) Beam, 67½ feet. Draught 21⅔ feet.

1933 *Photo, A. Renard.*

Guns:
6—11 inch.
8—6 inch.
4—3.4 inch AA.
8—M.G.
Torpedo tubes:
8—19.7 inch (*above water*).

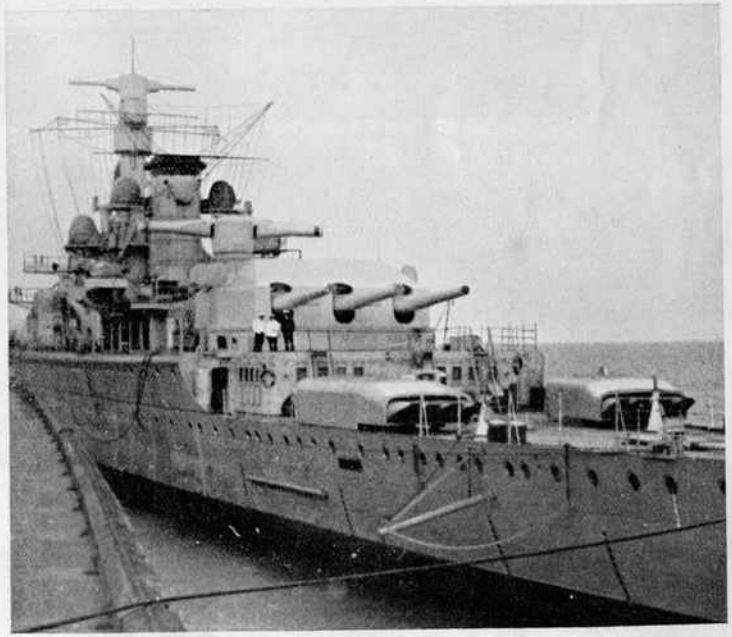
Armour:
Belt—5"—3" ends.
Turrets: 4" bases.
7" faces.
2—3" sides.
C.T. 5"
2" roof.
Deck 1—1½"
3" over magazine.



Machinery: 8 sets M.A.N. Diesels, of 7,100 H.P. each. H.P. 56,800 = 26 kts.
Radius: 10,000 miles at 20 kts.

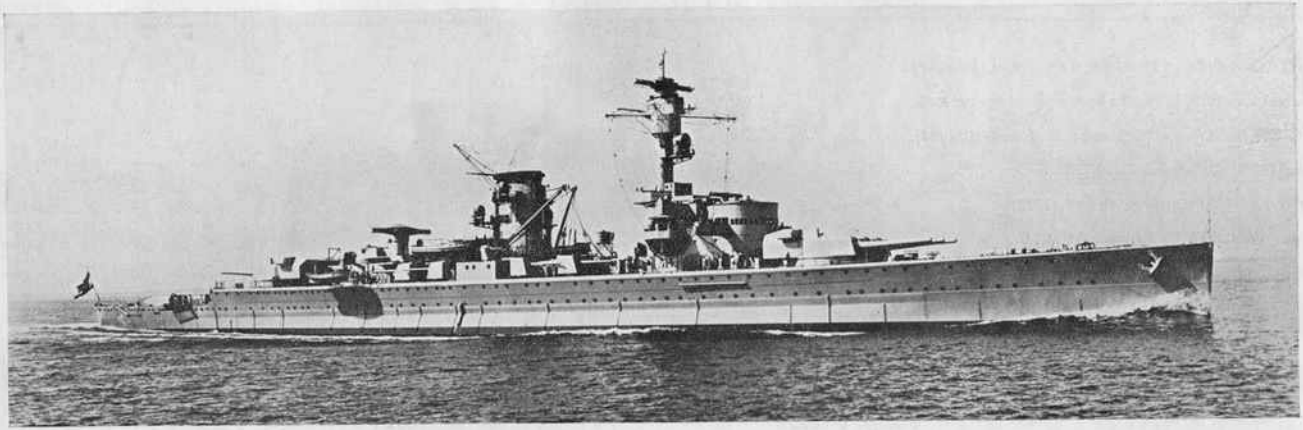
General Notes.—She is the first ship of her size to have an electrically welded hull and to be propelled by Diesel engines. By these means a saving in weight of 550 tons is said to be effected. The 11 inch guns are a new Krupp model, firing a 670 lb. projectile, with a range of 30,000 yards and an elevation of 60°. Cost will be £3,750,000=£375 per ton.

Machinery Note.—8 sets compressorless double-acting two-stroke M.A.N. Diesels each of 7,100 B.H.P. at 450 r.p.m. Total=56,800 H.P. Each set of four drives a single propeller shaft through Vulcan gear, which reduces speed to 250 r.p.m. Weight of engines about 17·6 lb. per b.h.p. excluding Vulcan drive, shafting, propeller and air reservoirs. Total weight of whole plant=48·5 lb. per b.h.p. Electrical welded plate framing employed for the first time.



1933 *Photo.*

BATTLESHIPS.



DEUTSCHLAND. 1933 *Photo, Official.*

(Deutschland Class—1st Ship.)

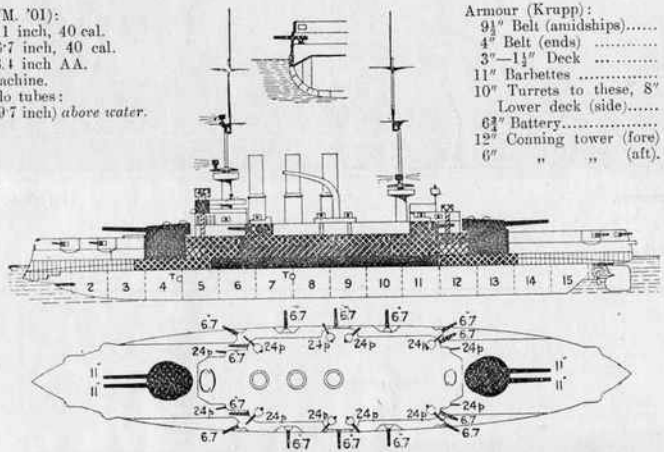
HANNOVER (Sept., 1905).

Displacement, 13,200 tons. Complement, 676.

Length (*waterline*), 413 feet. Beam, 72⅛ feet. *Mean* draught, 25¼ feet. Length (*over all*), 419 feet.

Guns (M. '01):
4—11 inch, 40 cal.
14—6·7 inch, 40 cal.
4—3·4 inch AA.
23 Machine.
Torpedo tubes:
4 (19·7 inch) *above water*.

Armour (Krupp):
9½″ Belt (amidships).....
4″ Belt (ends) .....
3″—1½″ Deck .....
11″ Barbettes .....
10″ Turrets to these, 8″
Lower deck (side).....
6⅞″ Battery.....
12″ Conning tower (fore)
6″ „ „ (aft).



Machinery: 3 sets 3 cylinder vertical triple expansion. 3 screws. Boilers: 12 Schulz Thornycroft. Designed H.P. 17,000/19,300 = 18 kts. Coal: *normal* 800 tons; *maximum* 1750 tons. Also 200 tons oil fuel. *Nominal* radius 5200 kts. at 10 kts.

Notes.—Built at Wilhelmshaven D.Y., '04/'07; Refitted 1929-30.

Hannover (after alterations). 1930 *Photo.*

(Deutschland Class—2nd and 3rd Ships.)

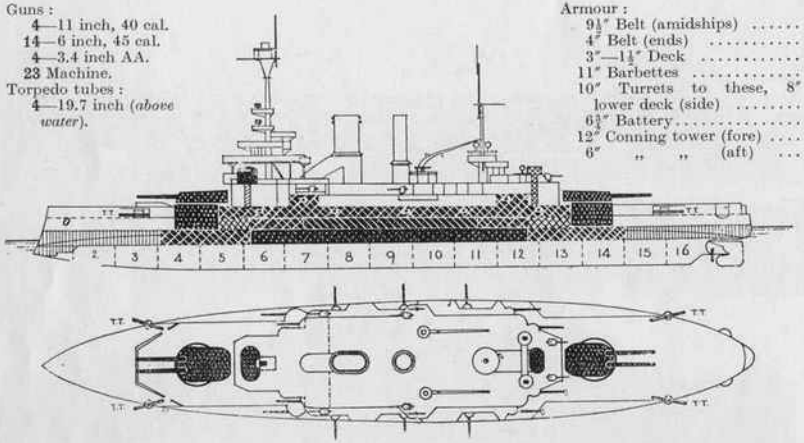
SCHLESIEN (May, 1906), **SCHLESWIG-HOLSTEIN** (Dec. 1906).

Displacement, 13,200 tons. Complement, 676 (760 as Flagship).

Length $\begin{cases} (w.l.)\ 413 \\ (o.a.)\ 419 \end{cases}$ feet. Beam, 72⅜ feet. *Mean* draught, 25¼ feet.

Guns:
4—11 inch, 40 cal.
14—6 inch, 45 cal.
4—3.4 inch AA.
23 Machine.
Torpedo tubes:
4—19.7 inch (*above water*).

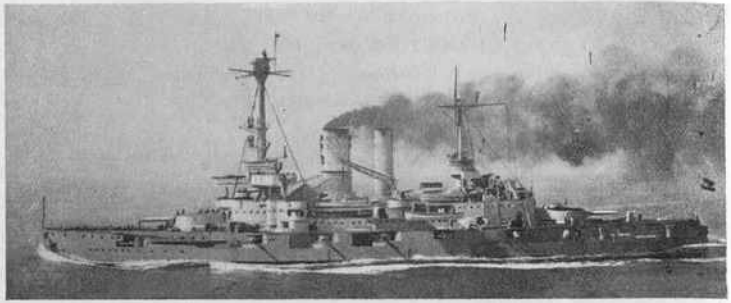
Armour:
9½″ Belt (amidships) .....
4″ Belt (ends) .....
3″—1½″ Deck .....
11″ Barbettes .....
10″ Turrets to these, 8″ lower deck (side) .....
6¾″ Battery .....
12″ Conning tower (fore) ....
6″ „ „ (aft) ...



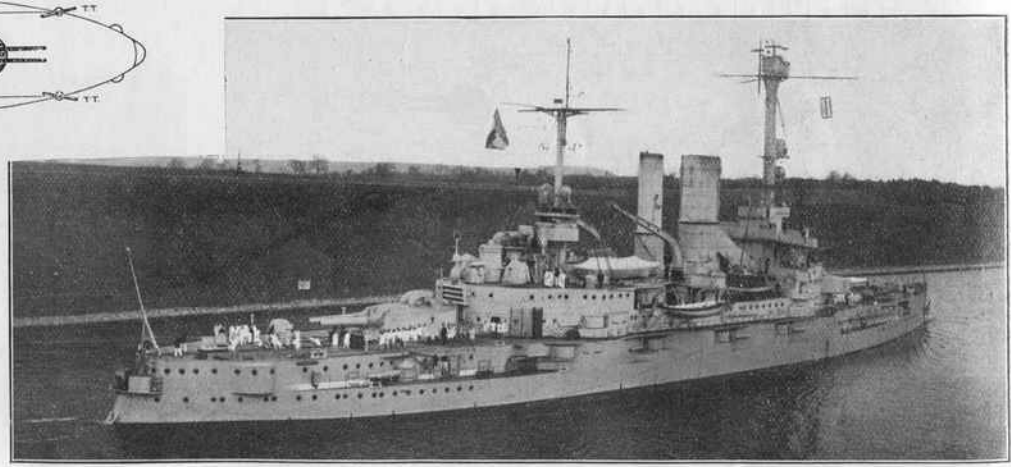
Note: After upper 6in. guns removed, 1931.

Machinery: 3 sets 3 cylinder triple expansion. 3 screws. Boilers: 12 Schulz-Thornycroft. Designed H.P. 17,000/19,300 = 18 kts. Coal: *normal*, 800 tons; *maximum*, 1800 tons. Oil fuel: 230 tons. *Nominal* radius: 5900 miles at 10 kts.

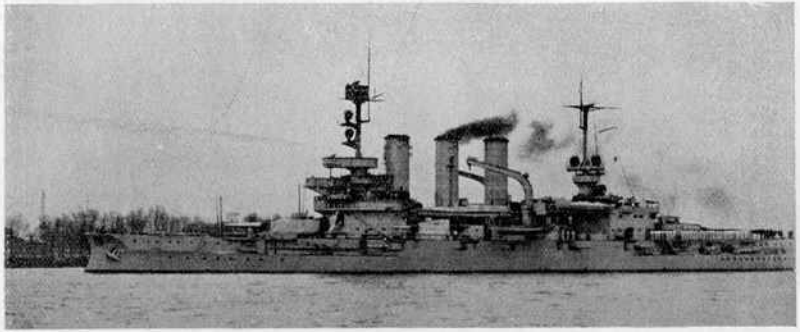
Notes.—Schlesien and *Schleswig-Holstein* built by Schichau, Danzig, 1904-08 and 1905-08, respectively. Both were reconstructed and partially re-armed in 1926-28.



SCHLESIEN. 1931 *Photo.*



SCHLESIEN. 1927 *Photo, Renard, Kiel.*

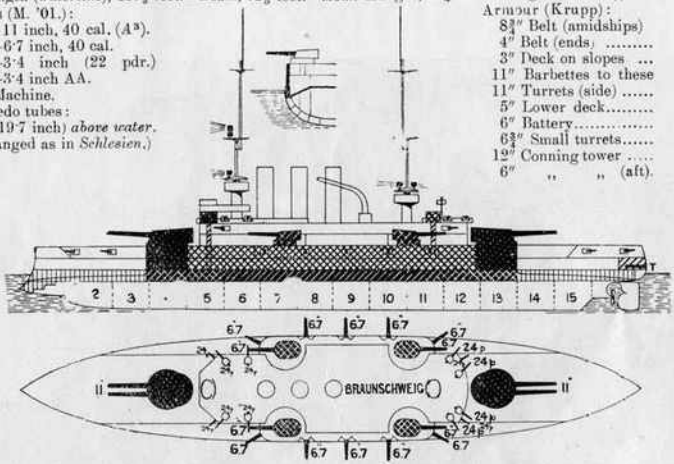


HESSEN. 1931 *Photo.*

HESSEN (Sept., 1903), Germania Kiel.
Displacement, 13,200 tons. Complement, 676.
Length (*waterline*), 413½ feet. Beam, 72⅔ feet. *Mean* draught, 25¼ feet. Length (*over all*), 419 feet.

Guns (M. '01.):
4—11 inch, 40 cal. (*A*[3]).
12—6·7 inch, 40 cal.
4—3·4 inch (22 pdr.)
4—3·4 inch AA.
23 Machine.
Torpedo tubes:
4 (19·7 inch) *above water*.
(Arranged as in *Schlesien*.)

Armour (Krupp):
8¾" Belt (amidships)
4" Belt (ends) .....
3" Deck on slopes ...
11" Barbettes to these
11" Turrets (side) .....
5" Lower deck.....
6" Battery.....
6¾" Small turrets.....
12" Conning tower .....
6" „ „ (aft).



Machinery: 3 sets 3 cylinder vertical inverted triple expansion. 3 screws. Boilers: 8 single-ended coal-burning and 2 single-ended oil-burning Schulz-Thornycroft. Designed H.P. 16,000 = 18 kts. Coal: 1,090 tons. Oil: 200 tons. Radius: 3,000 miles at 16 kts., 5,000 miles at 10 kts. Builder: Germania, Kiel; begun 1902, completed 1906, refitted 1923–25. *Braunschweig, Elsass, Preussen, Lothringen* have been removed from effective list.

Cruiser.

LEIPZIG. 1932 *Photo.*

1927 CRUISER.

Cruisers—Special Note.

Establishment permitted by Treaty : 6 in commission, 2 in reserve.

Not to be replaced under 20 years old.

New ships not to exceed 6000 standard tons displacement, or to be armed with a gun heavier than 6 inch.

(Leipzig Class—1 Ship)

LEIPZIG (October 18th, 1929).

Displacement, 6,000 tons. Complement, 597.
Length, 543 feet 10½ inches (*p.p.*), 544½ feet (*w.l.*), 580 feet (*o.a.*).

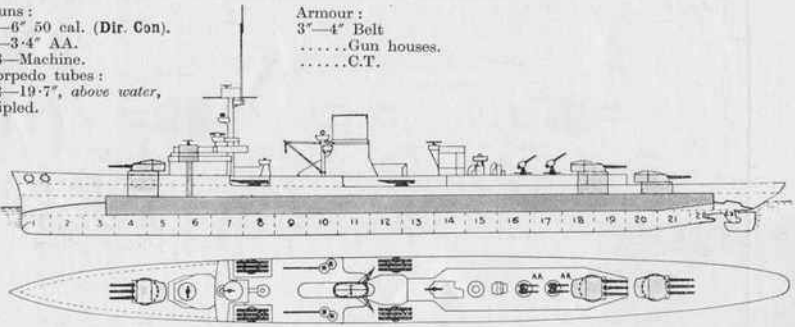
Beam, 53 feet 5½ inches.

Mean draught, 15 feet 7¼ inches.

Leipzig. 1932 *Photo.*

Guns :
9—6″ 50 cal. (Dir. Con).
4—3·4″ AA.
18—Machine.
Torpedo tubes :
12—19·7″, *above water*, tripled.

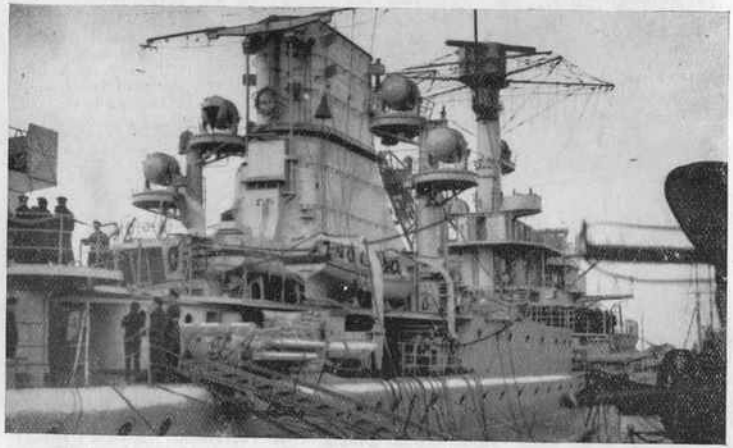
Armour :
3″—4″ Belt
.....Gun houses.
.....C.T.



Machinery : Geared turbines, 60,000 S.H.P. with Diesel engines of 12,000 B.H.P. Speed : 32 kts. Triple screws (centre—system " Helix "). Boilers : 6 " Marine " type (modified Schulz-Thornycroft), double-ended oil burning. Centre shaft Diesel driven : can be used for cruising or combined with turbines to give full speed. Radius of action with Diesel engines at 14·5 kts : 3,800 miles ; with turbines at 14·5 kts. : 3,200 miles = 7,000 miles. Radius could be greatly augmented if all bunkers were filled with Diesel fuel only.

Machinery Notes.—Variable pitch propeller on inner shaft, which "feathers" when Turbines only are used. Under Diesels alone, wing shafts are spun by 500 b.h.p. motors through spur gearing from centre shaft thus obviating loss of 3,000 b.h.p. if they were allowed to turn idly. Plant is four 7-cyl. M.A.N. two-stroke double-acting compressorless Diesels. Engine speed = 600 r.p.m. Four engines to each shaft, through Vulcan hyd. clutches and reducing gear, giving shaft speed of 400 r.p.m. Weight of machinery, including scavenging blower and its driving engine, and auxiliaries to propelling plant = 12·1 lb. per b.h.p. (5·5 kg.).

General Notes.—Laid down at Wilhelmshaven April 18th, 1928. To be completed in 1931. Modified *Königsberg* design with after turrets in centre-line and uptakes trunked into one funnel : fitted with bulges below water-line which are to be filled with oil fuel and are designed to improve speed lines rather than to act as a means of protection.



Leipzig. 1931 *Photo.*

(KÖNIGSBERG CLASS—3 SHIPS.)

KÖNIGSBERG (March 26th, 1927), **KARLSRUHE** (August 20th, 1927), **KÖLN** (May 23rd, 1928).

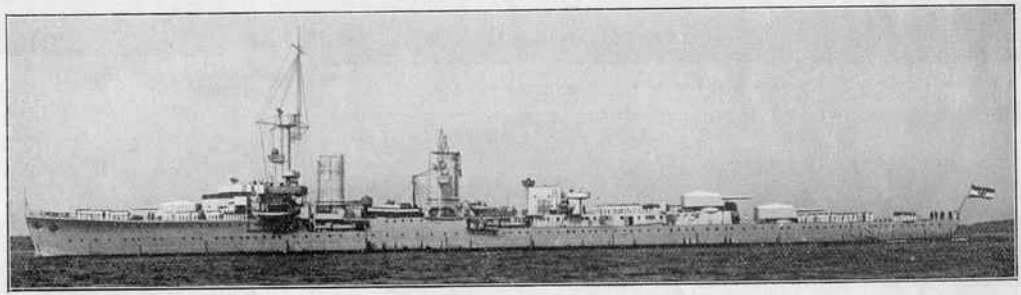
Displacement, 6000 tons. Complement, 553.

Length, 554 feet 5½ inches (*w.l.*), 570 feet (*o.a.*),

Beam, 49 feet 10½ inches.

Designed draught, 17 feet 9 inches.

KARLSRUHE. 1930 *Photo, Schäfer.*

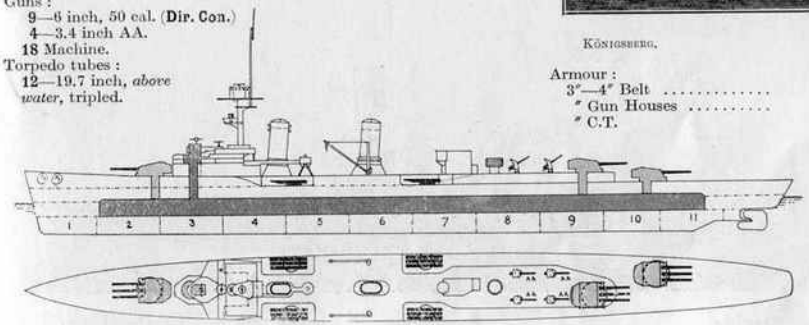


KÖNIGSBERG. 1929 *Photo, Renard.*

Guns :
- **9**—6 inch, 50 cal. (**Dir. Con.**)
- **4**—3.4 inch AA.
- **18** Machine.

Torpedo tubes :
- **12**—19.7 inch, *above water*, tripled.

Armour :
- 3"—4" Belt .....
- " Gun Houses .....
- " C.T.

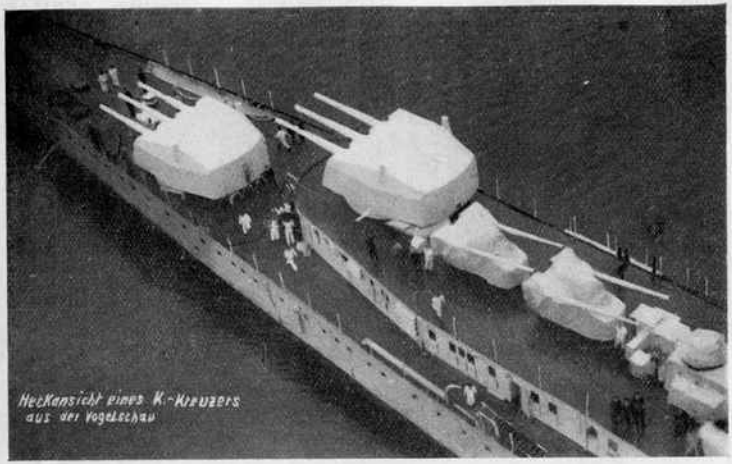


Machinery : Geared turbines with Diesel engines for cruising purposes. Boilers : Schulz-Thornycroft. Designed H.P. 65,000 = 32 kts. Fuel : 1200 tons oil. Radius : at 14 kts., 5500 miles ; at 10 kts., 10,000.

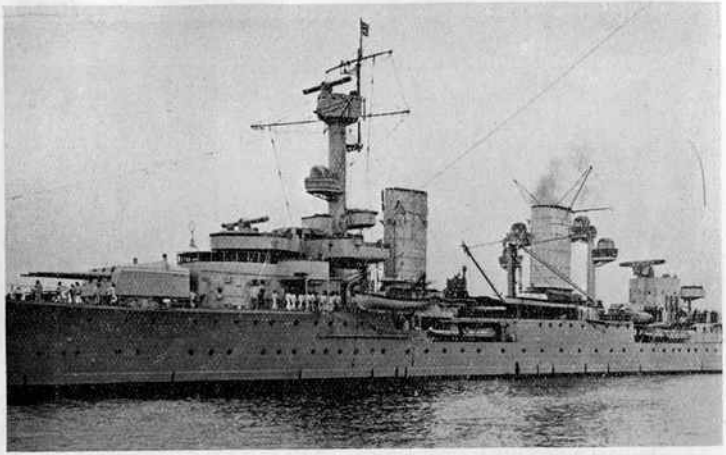
Name	*Building Yard*	*Begun*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
Königsberg	Wilhelmshaven	12/1/26	Spring, 1929		Schulz-Thorny-croft	32.2
Karlsruhe	Deutsche Werke, Kiel	27/7/26	Autumn, 1929			
Köln	Wilhelmshaven	7/8/26				

General Notes.—Every possible expedient for saving weight has been employed in these ships. A very high grade of steel was selected, and electric welding has taken the place of riveting.

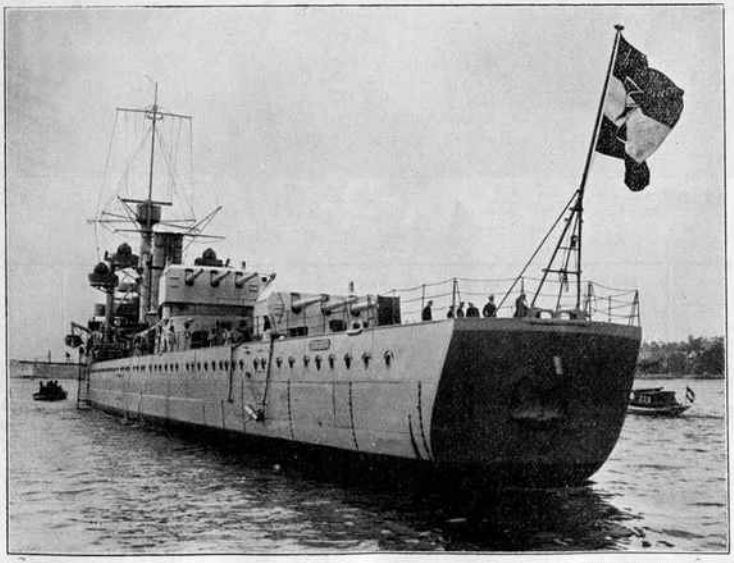
Gunnery Notes.—Triple 6 inch can fire simultaneously at rate of 6 to 8 salvoes a minute, and range to 20,000 yards. Disposition of after turrets is governed by arrangement of ammunition handling rooms. The 3.4 inch guns are now paired in *Karlsruhe* and *Köln*.



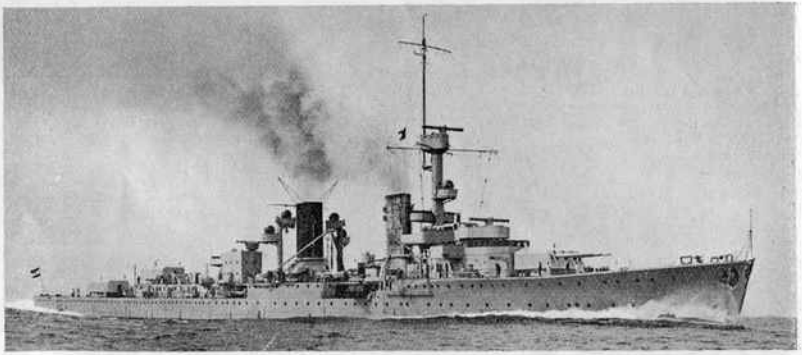
Staggered after Turrets, and Twin AA. Guns.



KÖLN. All now have short fixed Topmasts. 1931 *Photo.*



KÖNIGSBERG. 1929 *Photo, Renard.*



KÖNIGSBERG. 1930 *Photo, Schäfer.*

EMDEN (Wilhelmshaven, 7th January, 1925).

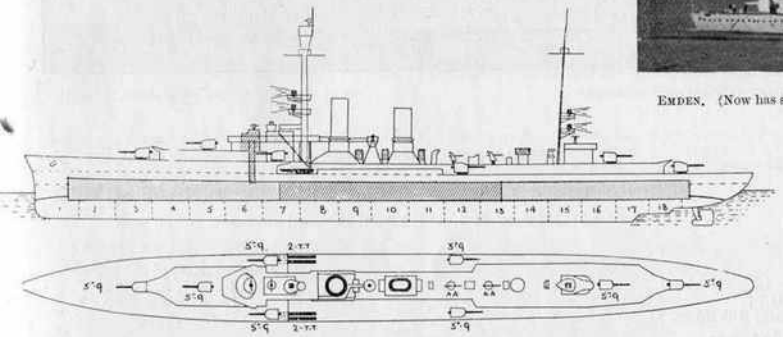
Standard displacement, 5,600 tons. Complement, 506.

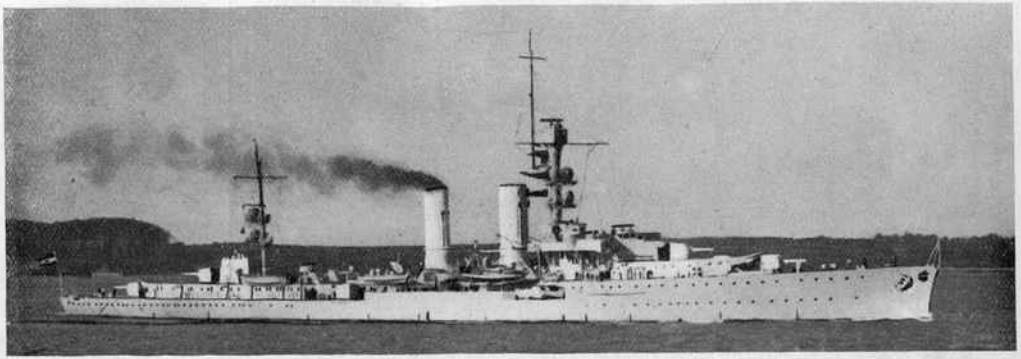
Dimensions: 493¾ (*w.l.*), 508½ (*o.a.*) × 46¾ × 17½ feet (*mean* draught).

Guns:
8—6 inch 45 cal. (**Dir. Con.**)
2—22 pdr. AA.
18—Machine.

Torpedo tubes:
4—19.7 inch (*above water*)

Armour:
3″—4″ Belt .....
″ Gun Houses .....
″ C.T.





EMDEN. (Now has short fixed fore top-mast.) 1931 *Photo.*

Machinery: Geared turbines. Boilers: 10 Schulz-Thornycroft "Marine" type (4 coal-burning, 6 single-ended oil-burning). Designed H.P. 46,500 = 29 kts. Fuel: 1120 tons coal and oil. Effective cruising radius: 6500 miles. Laid down in summer of 1921; commissioned 15th October, 1925.

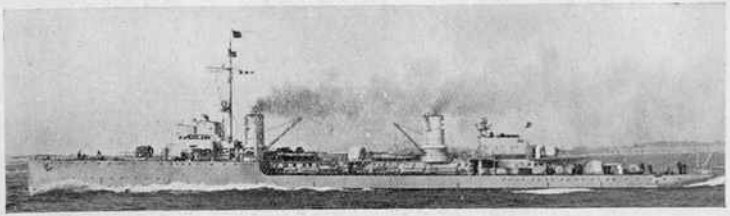
Armour Notes.—Belt ceases about 33 feet short of ends.

Engineering Notes.—Designed to maintain a speed of 27.5 kts. in fair weather. Revs. per minute: 2435 H.P. turbines, 1568 L.P. turbines, geared down to 295 R.P.M. on propellers. Mixed firing was adopted in this ship, with the object of being independent of overseas oil supplies if necessary. On trials, designed speed was slightly exceeded with 46,500 H.P.

General Notes.—To save weight, electric welding was extensively used in construction of this cruiser. The tubular foremast is about 5 feet in diameter. Masting modified and second funnel heightened, 1926-27. *Emden* was designed for foreign service, particular attention being paid to accommodation.

EMDEN. *Photo added* 1930, *W. W. Stewart, Esq.*

GUNNERY SHIP (1931).



1933 *Photo, Official.*

(Rig and funnels altered 1932). *Photo* 1933. *Renard, Kiel.*

BREMSE (Wilhelmshaven, Jan. 24, 1931).

Displacement, 1250 Tons. Complement, 144.

Dimensions, 339·5 (*o.a.*) × 31¼ × 9½ feet.

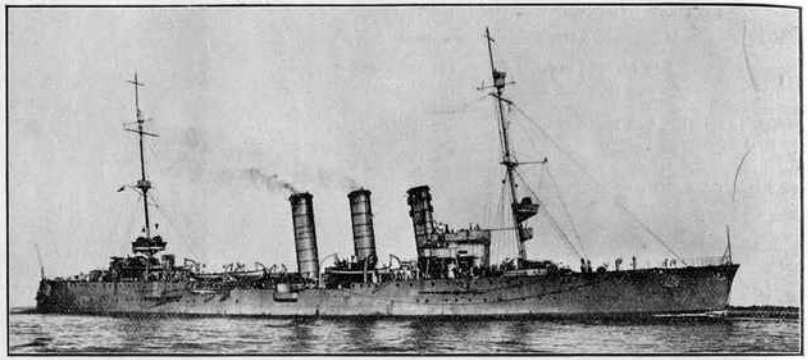
Guns: 4—4·1 inch.

Machinery: 8 M.A.N. double acting, 2 stroke, geared Diesels. 2 screws. Designed H.P. 26,000=27 kts. Oil fuel: ? Radius:

Note.—This ship is to be employed on gunnery school duties, and the boat derricks are arranged to handle heavy targets in a seaway. Her 27 knots will permit of high speed towing—a necessary provision in modern gunnery training.

Machinery Notes.—Is the first large German warship to have Diesel drive only. Plant consists of eight 8-cyl. M.A.N. two-stroke engines of 600 r.p.m. reduced by Vulcan gearing to shaft speed of 400 r.p.m. Four engines to each shaft (twin screw). Total 26,000 S.H.P. Height of engines 8ft. 6in. from top to centre of shaft. Machinery power per litre is 7·38 b.h.p. against 5·14 b.h.p. per litre in "Deutschland."

Old Cruiser.



BERLIN. (now has short mainmast). 1925 *Photo, Renard.*

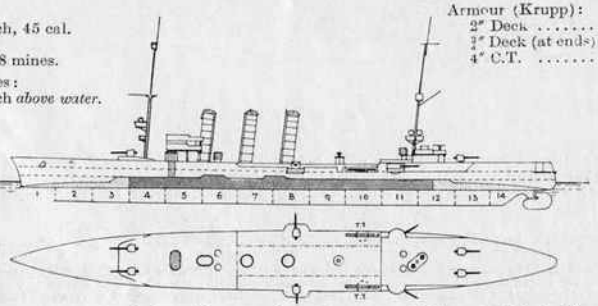
BERLIN (September, 1903).

Normal displacement, 3650 tons *metric*. Complement, 349.

Dimensions: 362·9 × 43·3 × 16½ feet (designed draught).

Guns:
8—4.1 inch, 45 cal.
18 M.G.
Can carry 108 mines.
Torpedo tubes:
2—19.7 inch *above water*.

Armour (Krupp):
2" Deck .....
1" Deck (at ends) ..
4" C.T. .....



Machinery: 2 sets 3-cylinder triple expansion. 2 screws. Boilers: 10 Schulz-Thornycroft. Designed H.P. 10,000 = 22 kts. Coal: *normal*, 400 tons: *maximum*, 860 tons. *Nominal* radius: 5900 at 10 kts. Begun 1902, completed 1904. At Kiel in reserve. *Hamburg* and *Amazone* still exist.

30 Destroyers and Torpedo Boats.

*Permitted Establishment 24 boats + 8 in Reserve.

General Notes.

Age limit under Treaty, 15 years. Displacement of new destroyers must not exceed 800 tons, and of torpedo boats 200 tons.

Practically all German Torpedo Craft now in service have had fore funnel heightened and clinker screen added.

"*G* boats" built by Krupp's Germania Yard. Unless otherwise noted, all boats have Schulz-Thornycroft (or "Marine Typo") boilers. The details tabulated are generally simplified to the average design of each group.

"*T*-boats" were built with the usual *G*, *S* and *V* builders' index letters, but were given letter *T* to avoid duplication of numbers with the later boats numbered from *V 1* up to *S 23*, and the "War Types," *V 25*—*S 223*. In description of *T* boats, *G* refers to Krupp-Germania boats, *V* to Vulcan boats, and *S* to Schichau boats.

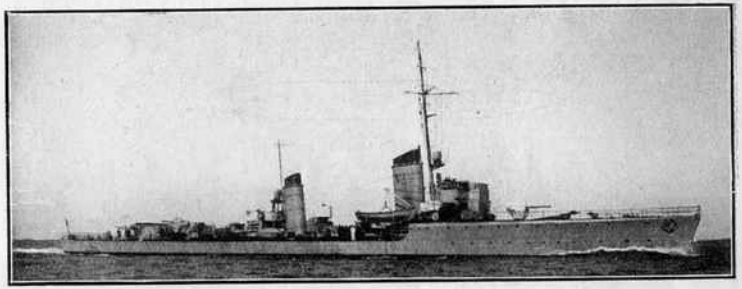
JAGUAR. (All are now having AA. guns before second funnel). 1933 *Photo.*

1926.

WOLF. (Now has identification W.L.) 1930 *Photo, Schäfer.*

6 *Wilhelmshaven Yard:* ***Iltis, Wolf*** (both Oct. 12th, 1927), ***Jaguar, Leopard, Luchs, Tiger*** (all March, 1928). Laid down 1927 as *W* 109–114, for completion in summer of 1928 to replace worn out destroyers and torpedo boats. Displacement: 800 tons (1000 tons deep load). Dimensions: 292 (*p.p.*), 304 (*o.a.*) × 28 × 9 feet. Guns: **3**—4.1 inch, 45 cal. Torpedo tubes: **6**—19.7 inch (tripled parallel). Designed S.H.P.: 23,000 = 34 kts. Geared turbines and Schulz-Thornycroft boilers. Oil fuel: 330 tons. Complement, 118. Other details not yet reported, but are of same general type as *Möwe* class, with minor improvements.

1924-25.

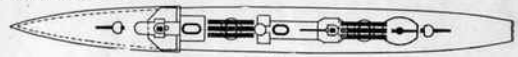


ALBATROSS. (All now have above appearance.) 1928 *Photo, Wilh. Schäfer, Kiel.*

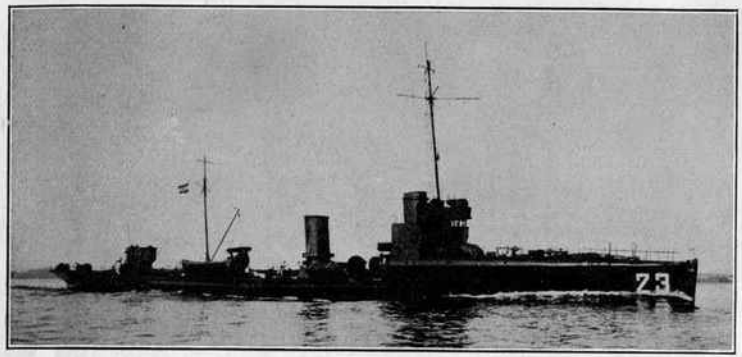
6 *Wilhelmshaven Yard:* ***Möwe*** (March 4th, 1926), ***Albatross, Greif, Seeadler*** (all three July 15th, 1926), ***Falke, Kondor*** (both Sept. 22nd, 1926). Displacement: 800 tons (960 tons deep load). Dimensions: 277½ × 27½ × 9½ feet draught. Guns: **3**—4.1 inch, 45 cal., **2** S.L. Torpedo tubes: **6**—19.7 inch (tripled parallel). Geared turbines, 3 Schulz-Thornycroft boilers. Designed S.H.P. 23,000 = 33 kts. (exceeded on trials). Oil fuel: 320 tons. Complement, 116.

Notes.—Laid down under 1924 and 1925 Programmes, as *W* 102-107. *Möwe* commissioned October 1st, 1926, others passed into service during 1927, replacing old destroyer *T* 175 and the worn-out torpedo boats of *T* 149 type. Have longitudinal framing and double bottom to hull. Guns said to elevate to 80°. The cost of these vessels is extraordinarily high, working out at about £215 per ton.

WOLF and MÖWE types.
Möwe has pointed stern.

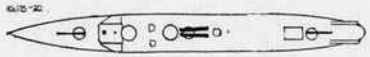


1912-13.



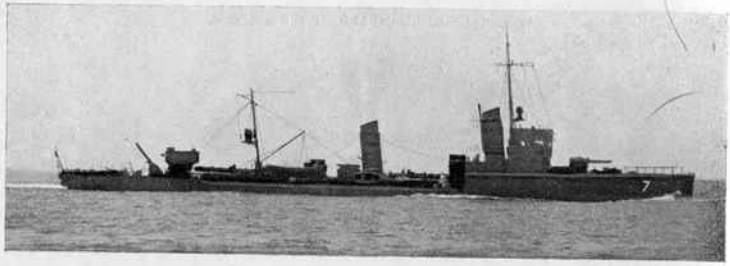
T 23. 1928 *Photo, Renard, Kiel.*

3 *Schichau*: ***S 18, S 19, T 23.*** Launched 1913. 640 tons. Dimensions: 234¾ × 24½ × 9¾ feet. Armament: **2**—4·1 inch, 45 cal. **7** M.G. Torpedo tubes: **2**—19·7 inch. Designed S.H.P. 15,700 = 31 kts. Schichau turbines. Fuel: 146 tons coal + 65 tons oil. Complement, 84.



Now carry two single tubes in centre-line.

1911-1912 (and two **1913** Replace Boats).



G 7 (as modified and lengthened). 1930 *Photo.*

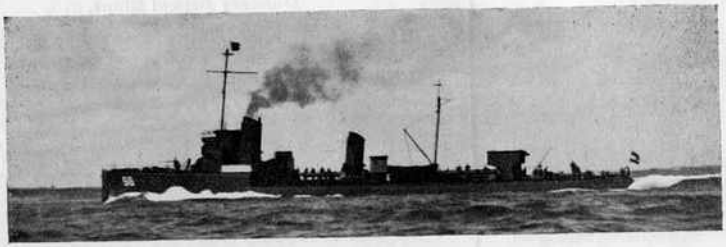
4 *Krupp-Germania*: ***G 7, G 8, G 10, G 11*** (launched 1911-12).

Displacement: 760 tons. Dimensions: 249½ × 24½ × 9¾ feet. Armament: **2**—4·1 inch, 45 cal. Torpedo tubes: **2**—19·7 inch. Machinery: turbines. Parsons in Germania boats. Designed H.P.: 16,000 = 31 kts.; Fuel: 156 tons coal, 80 tons oil; 3 Schulz-Thornycroft boilers (oil burning). Complement, 84.

G 7, G 8, G 10, G 11 have been lengthened 14¾ feet during alterations 1928-31.

DESTROYERS—*continued.*

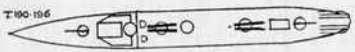
1910-11.



T 196. 1930 *Photo, Schäfer.*

1 *Krupp Germania*, **T 196** (ex-*G 196*). } launched 1911. Big refit 1927-28.
1 *Vulkan*, **T 190** (ex-*V 190*). }

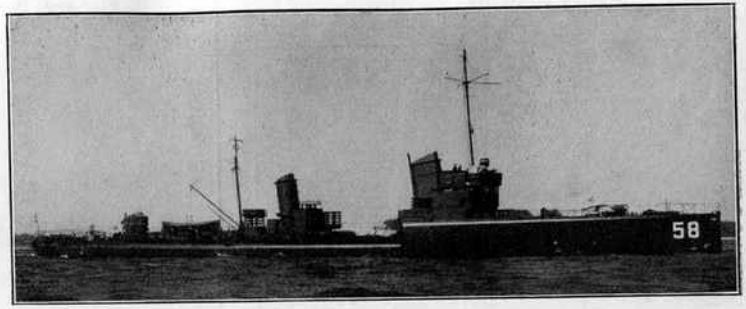
Displacements: *G* boat 648 tons, *V* boat 656 tons *normal* (800 tons *full load*). Dimensions: 242¼×25½×10½ feet.
Armament: **2**—4·1 inch, 45 cal. Torpedo tubes: **2**—19·7 inch. Machinery: Parsons turbines in *G* boat, A. E. G. Curtis in *V* boat. Designed H.P.: *T 196*, 18,200=27·5 kts.; *T 190*, 18,000=30·5 kts. Fuel: *T 196*, 204 tons; *T 190*, 198 tons oil. 4 Schulz-Thornycroft boilers (oil burning). Complement, 84.



(Now carry two single tubes only.)

TORPEDO BOATS.

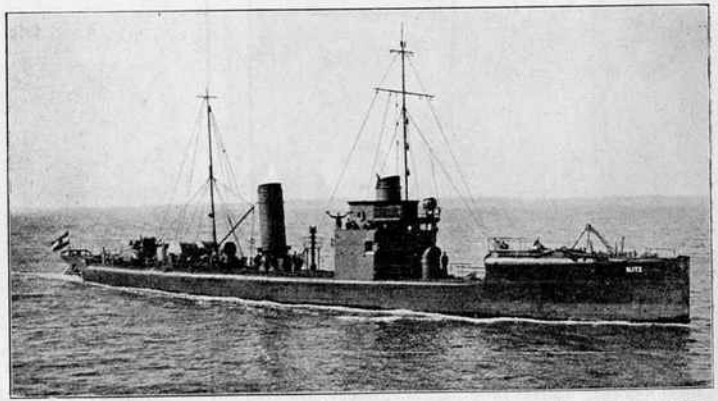
1907-08.



T 158. 1928 *Photo, Renard.*

1 *Schichau*, **T 148** (ex-*S 148*).
8 *Vulcan*, **T 151–158** (ex-*V 151* etc.). Launched 1907-8.
Displacement: 554 tons. *normal* 675 tons *full load*). Dimensions: 237½×25½×9¾ feet (*mean* draught).
Guns: **2**—3·4 inch (15 pdr.), 45 cal.
Torpedo tubes: **2**—19·7 inch (paired).
Machinery: Reciprocating engines. Designed H.P. 10,900=30 kts. Oil: 175 tons.
Complement, 84.

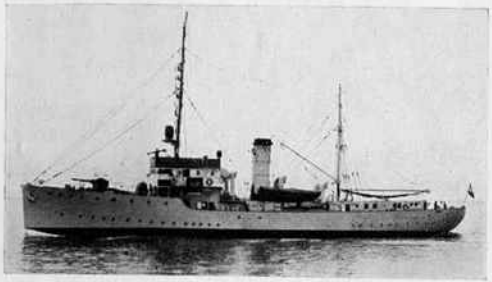
Ex-Torpedo Boats.



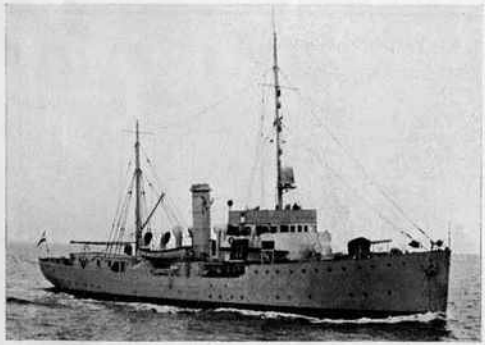
BLITZ. 1929 *Photo, by favour of Lieut-Commdr. Steen Steensen, R.D.N.*

Blitz (ex T 185), **Pfeil** (ex T 139). Old boats used for target control, manœuvring the ex-battleship **Zahringen** by radio.

Fishery Protection Vessels.



WESER 1933 *Photo.*



WESER 1932 *Photo.*

ELBE, WESER (both launched Jan. 24, 1931 at Wilhelmshaven). Displacement: 600 tons. Dimensions: 157½ × 27¼ × 10¼ feet. Armament: 1—3·4" gun. Machinery: 2 sets Linke-Hofmann—Busch 6-cylinder 4-stroke Diesel engines. 2 screws. Designed H.P. 1600=15 kts. Radius: 7000 miles at 11 kts. Complement: 45.

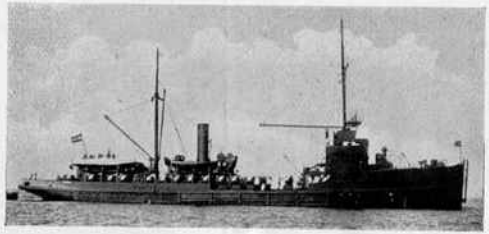
Fishery Protection Vessels (*continued*).

ZIETEN. 1932 *Photo.*

ZIETEN (ex-*M* 138, Tecklenborg, Feb. 17th, 1919). Displacement 550 tons. Dimensions: 183½ × 24 × 7½ feet. Guns: none. 2 sets Diesel engines each 420 B.H.P. = 12 kts. Complement, 35. Fuel: 90 tons.

Note.—Ex-Minesweeper converted for present service in 1924.

Blocking Service Ships



MT 1 1930 *Photo.*

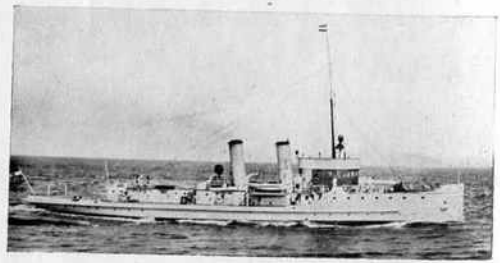
MT1, MT2, both launched 1917 at Neptun Yard, Rostock. Displacement: 570 tons. Dimensions: 164 × 30½ × 7½ feet. Armament: none. Machinery: 2 screws triple expansion. Boilers: 2 single-ended coal-burning Schulz-Thornycroft. 2 screws. Designed H.P. 375=10 kts. Radius: 1,200 miles at 7 kts. Complement: 52.

MISCELLANEOUS VESSELS.

Gunnery School Ships.

FUCHS. 1930 *Photo.*

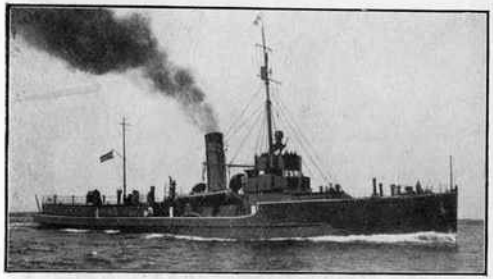
FUCHS (ex-*M* 130, 1919). Displacement: 525 tons. Dimensions: 184×24×7½ feet. Guns: 2—4·1" AA. Machinery: 2 sets triple expansion. Boilers: 2 Schulz w.t. 2 screws. D.H.P. 1,800=16 kts. Complement, 52.



1933 *Photo.*

DRACHE (Germania, 1908). 790 tons. Dimensions: 177×30½×9¾ feet. Complement, 66. Guns: 4—4.1". H.P. 1675=15. Coal: 150 tons.

Tenders.

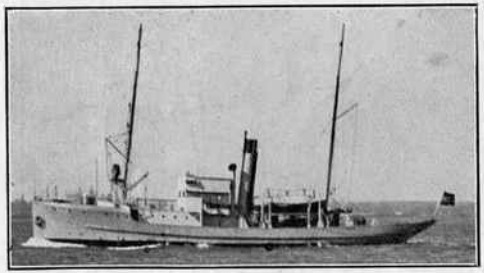


HELA. 1925 *Photo, Renard.*

HELA (ex-Minesweeper *M* 135). (March 15th, 1919), **DELPHIN** (ex - *N 108*, 1919), **FRAUENLOB** (ex - *M 154*, 1919). Displacement, 525 tons. Dimensions : 184 × 24 × 7½ feet. Armament : None. Machinery : 2 sets triple expansion. Boilers : 2 Schulz water tube. 2 screws. Designed H.P., 1800 = 16 kts. Complement : 47.

FRAUENLOB. 1933 *Photo.*

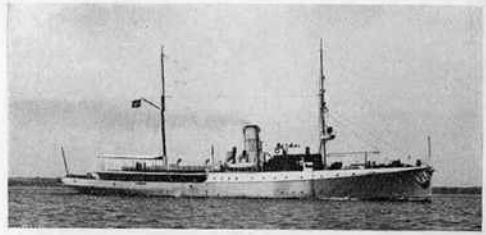
Tenders—*continued.*



1928 *Photo.*

GRILLE (ex-Trawler *Von der Goltz*, 1916). Purchased 1927 for use as Tender to Mining and Torpedo Inspection. 470 tons. Dimensions : 118¾ × 24 × 10½ feet. 1 screw. H.P. 400 = 10 kts. Classed as Experimental Vessel (*Versuchsfahrzeug*).

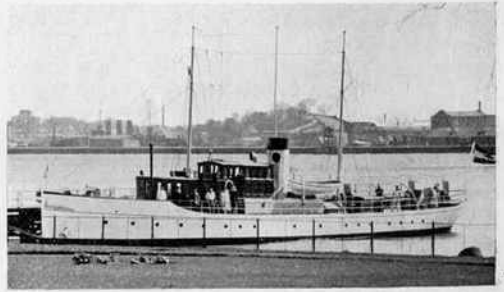
Fleet Tender & Repair Vessel.



1930 *Photo.*

NORDSEE (Atlas Werke, Bremen, 1914). 830 tons. Complement, 27. Dimensions : 175¾ × 30¾ × 12 feet. Armament : Nil. H.P. 1680 = 12 kts. 2 screws. Well deck built up 1923.

Harbour Tender.

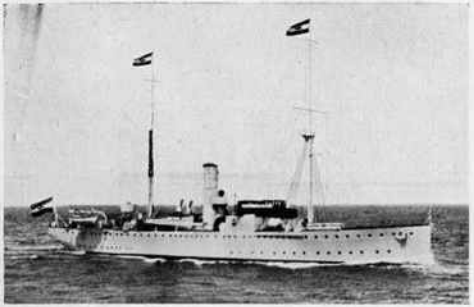


NIXE. 1930 *Photo.*

NIXE. Displacement : about 100 tons. Dimensions : 98½ × 16½ × 5½ feet. Machinery : 2 carbureting engines. 2 screws. H.P. 200 = 13 kts.

MISCELLANEOUS VESSELS.

Surveying Vessel (*Vermessungsfahrzeug*).



1933 *Photo.*

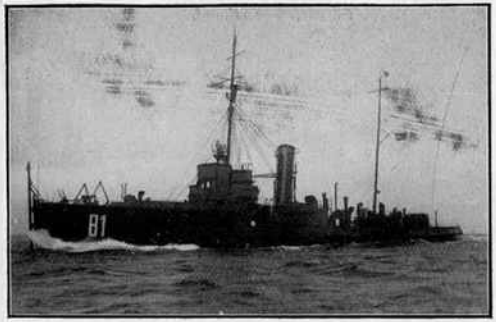
METEOR (Danzig, 18 Jan., 1915). 1200 tons. Complement, 111. Dimensions: 219½ × 33½ × 11½ feet. Guns: None. Machinery: 2 sets triple expansion. 2 screws. Boilers: 4 Schulz-Thornycroft. Designed H.P. 650 = 11.5 kts. Coal: tons. Completed June, 1925.

Target Service Ship.

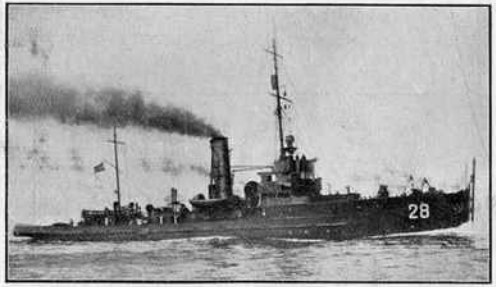
ZÄHRINGEN (1901). 1930 *Photo.*

ZÄHRINGEN (ex-Battleship), completely reconstructed 1926–28 for use as a wireless controlled target ship on similar lines to British *Centurion*. Displacement: 11,800 tons. Dimensions: 393½ × 68½ × 25 feet. H.P. 5,000 = 13 kts. 2 screws. Oil fuel and automatically fired boilers. Controlling vessel is ex-T.B. *Blitz*.

Experimental Ships.



NAUTILUS (ex-*M 81*). 1925 *Photo, Renard.*



PELIKAN (ex-*M 28*). 1925 *Photo, Renard.*

(See next column.)

Mine Sweepers.

No. 145. 1933 *Photo.*

31 boats:—

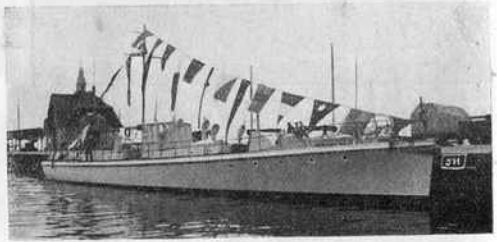
M 157	**M 129**	**M 111**	***M 98**	**M 72**
***M 146**	**M 126**	**M 110**	**M 89**	***M 66**
***M 145**	**M 122**	**M 109**	**M 85**	**M 61**
***M 136**	***M 117**	**M 107**	**M 84**	***M 60**
M 133	***M 115**	***M 104**	**M 82**	**M 50**
M 132	**M 113**	**M 102**	**M 75**	

* **NAUTILUS** (ex-*M 81*), * **PELIKAN** (ex-*M 28*).

Built 1916-1920. Displacement: *M 157—98*, 525 tons; *M 89—28*, 480 to 500 tons. Dimensions: 182 (*w.l.*), 192 (*o.a.*) × 23½ × 7 feet. Guns: 2 M.G. in some. Engines: 2 sets triple expansion. Boilers: 2 water-tube "Schulz." I.H.P. 1800 = 16 kts. 2 screws. Coal: 130 tons.

Notes.—Only a few units are maintained in commission (marked * above.) *Nautilus* and *Pelikan* are rated as Experimental Boats (*Versuchsboote*).

Motor Patrol Vessels (*Bewachungsfahrzeuge*).



1930 *Photo.*

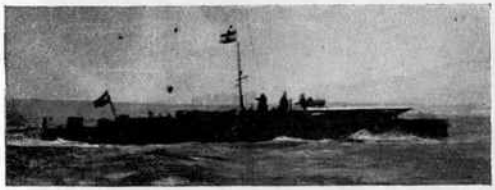
8 boats: **UZ 27, 28, 29, 30, 32, 33, 34, 35** (1919-20). 60 tons. Dimensions: 101½ × 14½ × 3¾ feet. H.P. 500 = 14 kts. 2 screws.

Motor Patrol Vessels.

Photo wanted.

UZ (S). 1931 *Photo.*

1 Boat: **UZ (S) 21** (1921). Displacement: 12 tons. Dimensions: 57⅞ × 8½ × 2⅝ feet. Armament: none. Machinery: 3 internal combustion. 3 screws. Designed H.P. 840=29 kts. Fuel: 1·5 tons Benzol. Complement: 8.



S1, *ex*-W1 *ex*-UZ (S) 16. 1931 *Photo.*

5 Boats: **S1–5** (1929–32). Displacement: about 20 tons. Dimensions: ? × ? × ? feet. Armament: 2 torpedo-tubes (special design). Machinery and other details unknown.

Motor Patrol Vessels.

R 1. 1931 *Photo.*

8 Boats: **R 1–8** (1930–33) Lürssen, Vegesack. Displacement: 45 tons. Dimensions: unknown. Armament: none. Machinery: 2 MWM Diesel engines. Designed H.P. 600=18 kts. Complement: 14.

UZ (S) 18.

1 Boat: **UZ (S) 18** (1927). Displacement: 26 tons. Dimensions: 70 × 13¾ × 3¼ feet. Armament: none. Machinery: 3 sets carbureting engines. 3 screws. Designed H.P. 720=27 kts. Fuel: 13 tons Benzol. Complement: 8.

There are 10 boats, belonging to the Blocking Division: Numbers between **C1—16** (1906–15), old steamers of 75–80 tons.

Training Ship.

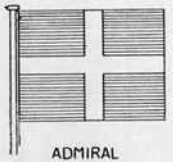
1933 *Photo.*

GORCH FOCK (1932–1933). Blohm & Voss, 1500 tons.
239·5 × 39·4 × 6·4 feet.
M.A.N. Diesels. H.P. 500=8 kts.
Sail area: 19,376 sq. ft.
Complement: 226.

GREECE.

Officially revised by courtesy of the Chief of the Naval General Staff, Athens, 1933.

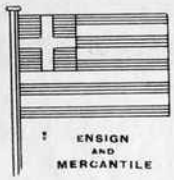
Flags.



ADMIRAL

Vice-Admiral's flag similar, but has a white ball in upper left canton.

Rear-Admiral's has a white ball in each left canton.



ENSIGN AND MERCANTILE

CAPTAIN COMMANDING A DIVISION

SENIOR OFFICER

Sky Blue

White

Personnel:—About 8,000 (conscript. 18 months or enlistment).
Minister of Marine:—Admiral Hadzikyriakos.
Chief of General Naval Staff:—Rear-Ad. Dimoulis.
Naval Attaché, London:—
Mercantile Marine:—537 vessels of 1,417,071 Gross Tonnage.

Uniforms.

1 2 3 4 5 6 7 8 9

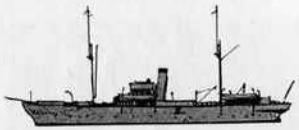
(1) Navarkhos. *Admiral.* (2) Andinavarkhos. *Vice-Admiral.* (3) Yponavarkhos. *Rear-Admiral.* (4) Ploiarkhos. *Captain.* (5) Andiploiarkhos. *Commander.*
(6) Plotarkhis. *Lieutenant-Commander.* (7) Ypoploiarkhos. *Lieutenant.* (8) Anthipoploiarkhos. *Sub-Lieut.* (9) Simaophoros. *Act. Sub-Lieut.*

Other branches without curl:—
Constructors: *black velvet.*
Paymasters: *scarlet velvet.*
Surgeons: *purple velvet.*
Apothecaries: *green velvet.*
Aviation: *light green velvet.*
Dockyard: *black.*

With curl:—
Engineers: *violet velvet.*

Tonnage.

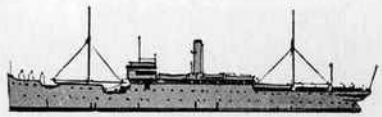
At Standard Displacement.



NAUTILUS.

PLEIAS.

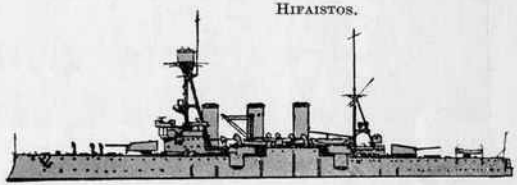
TENEDOS.
KORGIALENIOS.
PARALOS.



HIFAISTOS.

ARES.

HELLE.

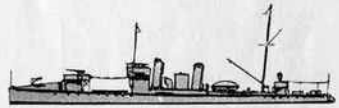


AVEROFF.

HYDRA *class.*

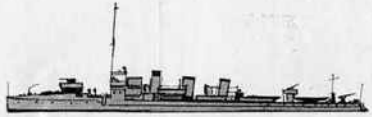
PERGAMOS *class.*

KIOS *class.*

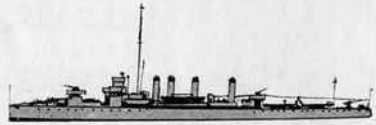


AIGLI *class.*

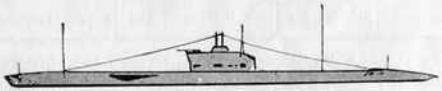
AETOS *class.*



ASPIS, NIKI.



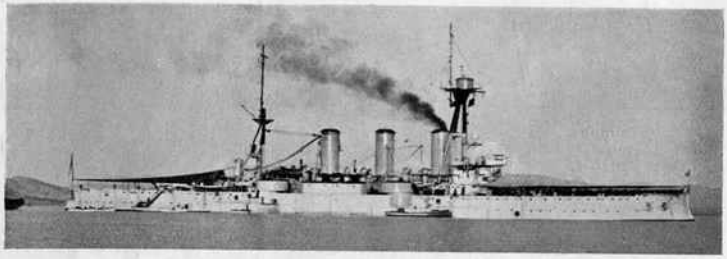
THYELLA.
SPHENDONI.



KATSONIS *class.*

NEREUS *class.*

(1907) Armoured Cruiser.



AVEROFF. 1931 *Photo, Official.*

AVEROFF (March, 1910).

Displacement, 9,450 tons. Complement, 670.

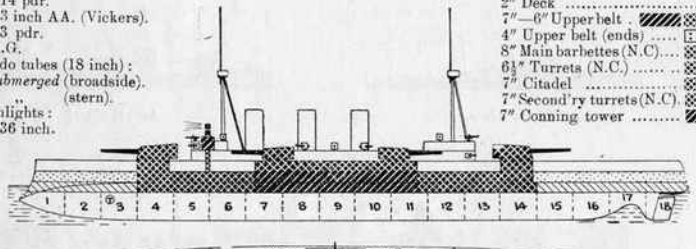
Length (*over all*), 462 feet. Beam, 69 feet. *Maximum* draught, 24⅔ feet.

Guns (Armstrong):
4—9·2inch, 45 cal. (**Dir. Con.**)
8—7·5 inch, 45 cal.
16—14 pdr.
2—3 inch AA. (Vickers).
4—3 pdr.
2 M.G.

Torpedo tubes (18 inch):
2 *submerged* (broadside).
1 ,, (stern).

Searchlights:
2—36 inch.

Armour (Terni):
8″ Belt (amidships) .....
3½″ Belt (ends) .....
2″ Deck .....
7″—6″ Upper belt .
4″ Upper belt (ends) .....
8″ Main barbettes (N.C.)....
6½″ Turrets (N.C.) .....
7″ Citadel .....
7″ Second'ry turrets (N.C.).
7″ Conning tower .....



Ahead:
2—9·2 in
4—7·5 in.

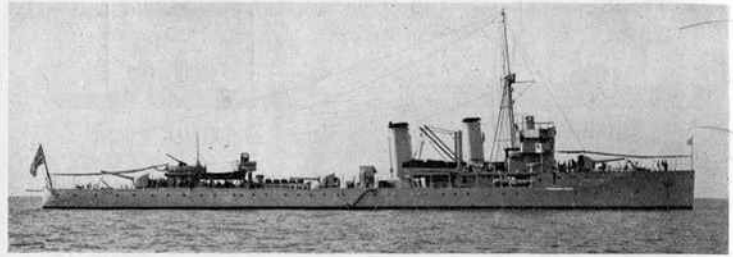
Astern:
2—9·2 in.
4—7·5 in.

Broadside: **4**—9·2 in., **4**—7·5 in.

Machinery: 2 sets 4 cylinder triple expansion. 2 screws. Boilers: 22 Belleville. Designed H.P. 19,000 = 22·5 kts. Trials: 21,500 = 23·9. Coal: *normal* 660 tons; *maximum* 1500 tons = 7125 miles at 10 kts.; 2489 miles at 17½ kts Built by Orlando.

Gunnery Notes.—All big guns hydraulically controlled. 2—12 pdr. AA. guns mounted on after superstructure.
General Notes.—Cost £950,750. Sister to Italian *Pisa*. Reboilered and completely refitted by Forges et Ch. de la Mediterranée, at La Seyne 1925-27, the alterations effected including the installation of new heavy type tripod foremast with director tower, additional rangefinders and searchlights AA. guns, new boats, etc.

Cruiser Minelayer.



HELLE. 1931 *Photo, Official.*

HELLE (ex-Chinese *Fei Hung*, May, 1912).

Displacement, 2115 tons. Complement, 232.

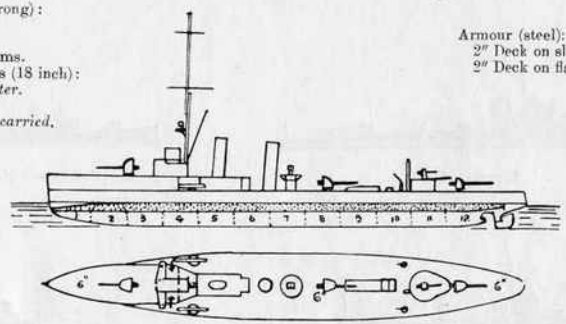
Length (*over all*), 322 feet. Beam, 39 feet. Draught, 14 feet.

Guns (Armstrong):
3—6 inch.
4—6 pdr.
2—Pompoms.

Torpedo tubes (18 inch):
2 *above water.*

110 *Mines carried.*

Armour (steel):
2″ Deck on slopes ...
2″ Deck on flat.....



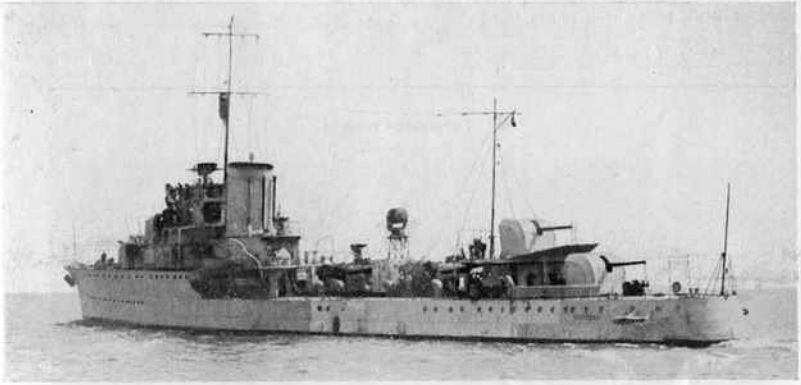
Machinery: 3 Parsons geared turbines. 3 screws. Boilers: 3 Yarrow. Designed H.P. 7500 = 20.5 kts. Oil: *normal* 600 tons = 7000 miles at 10 kts.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials:* 4 hours.	*Trials:* Full Power.	*Boilers*	*Best recent speed*
Helle	N.Y. Shipbldg.	N.Y. Shipbldg.	1910	Nov.,'13	7500=20·3	8650=21	Yarrow	

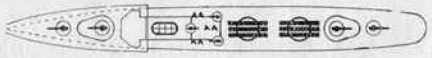
General Notes.—Built as the *Fei Hung* for China. Purchased 1914. Originally fitted with Thornycroft boilers, mixed coal and oil burning. Now converted to oil fuel only. Original turbines have also been replaced, and vessel equipped for mine-laying, 1926-28. This cruiser has been completely transformed by the reduction of her armament, 4 broadside guns being removed and main battery arranged on centre-line, as well as by the removal of the old poop and other heavy weights. The whole of this work was carried out by the F. & Ch. de la Mediterranée, La Seyne. On fresh trials 21 kts. with full mine load.

4 Hydra class

HYDRA. 1932 *Photo, Official.*



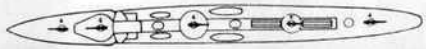
HYDRA. 1932 *Photo, Official.*



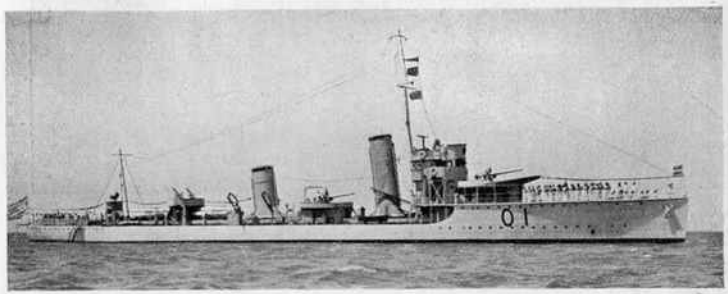
4 *Hydra* class: ***Hydra*** (1921) ***Spetsai, Psara*** (1922) ***Kondouriotis*** ordered Odero, 1929.
Displacement: 1350 tons, 2050 tons *deep load.*
Dimensions: 303 × 32 × 12½ feet full load.
Armament: **4**—4.7 inch. **3**—40 m/m AA., **6**—20. 8 inch tubes. *Hydra* and *Kondouriotis* fitted to carry 40 mines.
Machinery: 2 sets Parsons geared turbines. 3 Express type boilers. S.H.P. 2,000 = 39.5 kts. Oil: 630 tons.
Cost about £255,000 each. Radius 5,800 miles at 20 kts. Complement, 156.

Trials:	4 hrs.	*Hydra* 39·9.	*Spetsai* 40·9.	*Kondouriotis* 40·75 kts.
	Max.	„ 41·7.	„ 41·5.	„ 41·8 kts.

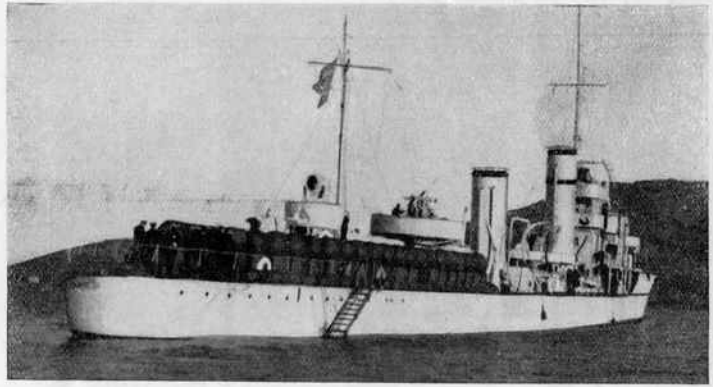
4 Aetos Class.



AETOS type.



AETOS. 1931 *Official Photo.*

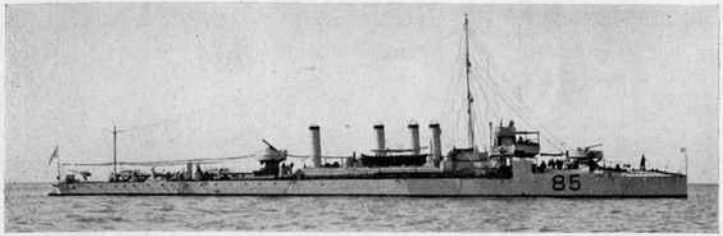


PANTHER. Equipped as a minelayer. 1927 *Official Photo.*

4 *Cammell-Laird* type: ***Aetos, Ierax, Leon, Panther*** (all launched 1911). 1013 tons *normal*, 1300 *full load.*
Dimensions: 293 × 27¾ × 8½ feet, *normal* draught; *full load* draught, 10 feet. Armament: **4**—4 inch Bethlehem (DIR. CON.), **2**—Pom-poms. Tubes: **6**—21 inch, in triple deck mountings. 3 searchlights. S.H.P. 19,750 = 32 kts. Combined Parsons and Curtis turbines. 4 Yarrow boilers. Oil: 260 tons. These were 4 boats, *San Luis, Santa Fé, Tucuman* and *Santiago*, built for Argentina. Purchased by Greece, Oct., 1912. Reconstructed and re-boilered by Messrs. J. S. White & Co., Ltd., E. Cowes, 1924-25.

General Notes.—The refit of these destroyers has proved a great success, the original speed being exceeded by 2 kts. From obsolescent craft they have been transformed into efficient and up-to-date destroyers little inferior to the British "W" type. *Aetos* and *Panther* are fitted for mine-laying, and carry 40 mines each.

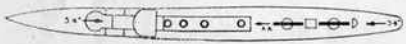
2 Thyella Class.



THYELLA. 1931 *Official Photo.*

2 *Yarrow* type: ***Thyella, Sphendoni*** (1906-07). 305 tons. Dimensions: 220½ × 20½ × 6 feet, *mean* draught; *max.* draught, 9 feet. Armament: **2**—3.4 inch Krupp, **1**—2.7 inch AA. **2** tubes (18 inch) Speed: 30 kts. Coal: 80 tons. Endurance: 1140 to 1250 miles at 15 kts. Complement, 70.

Notes.—Both refitted 1926-28.

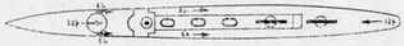


2 Niki Class.

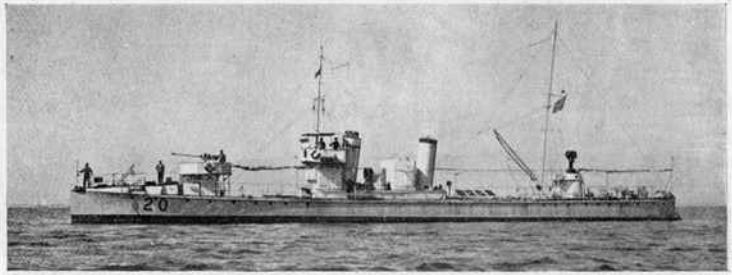
NIKI 1931 *Official Photo.*

2 *Vulkan Stettin* type: ***Aspis*** (1906), ***Niki*** (1905). 275 tons. Dimensions: 220½ × 20½ × 6 feet, *mean* draught: *max.* draught, 9 feet. H.P. 6700 = 30 kts. Armament: **2**—12 pdr., **4**—6 pdr. **2** tubes (21 inch). Coal: 90 tons. Complement, 70. Endurance: 1140 to 1250 miles at 15 kts.

Note.—Both underwent a thorough refit, 1928-29.



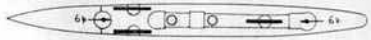
4 Torpedo Boats.



AIGLI. 1931 *Official Photo.*

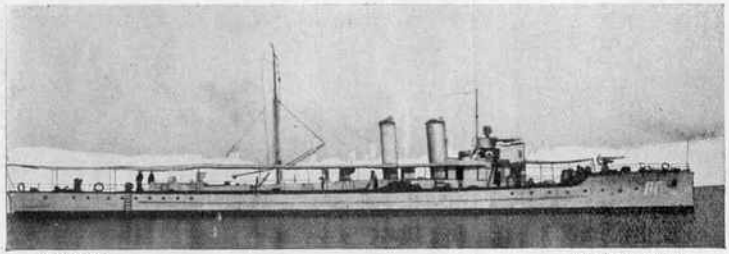
4 *Vulkan* type: ***Aigli, Alkyone, Arethousa, Doris,*** (all launched 1913). 145 tons. Dimensions: 147½ × 9½ × 4 feet. Armament: **2**—6 pdr. Bethlehem. **2**—18 inch tubes. I.H.P. 2600=25 kts. (about 24 kts. best speed now). Trials: *Aigli* 26·2, *Doris* 25·7. Coal: 60 tons.

Note.—These four boats were completely refitted, 1926-30.



(One Tube in centre line forward).

Patrol Vessels (ex-Torpedo Boats).



PERGAMOS. 1922 *Photo, Official*

2 *Ex-Austrian* boats: ***Pergamos*** (ex-95 *F*), ***Prousa*** (ex-92 *F*). Built by Ganz-Danubius Yard, Fiume (1914-1915). 241 tons. Dimensions: 188½ × 19 × 4·9 feet *max.* draught. H.P. 5000 = 28 kts. 2 turbines. 2 Yarrow boilers (1 coal and 1 oil). Fuel: 21 tons coal + 31 tons oil. Guns: 1—11 pdr. Skoda (*Pergamos* has 2). 2—18" Tubes. Complement, 25.

Note.—These boats underwent a general refit at Piraeus, 1926. Original speed exceeded.

KYZIKOS. 1932 *Official Photo.*

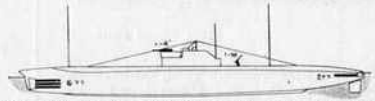
3 *Ex-Austrian* boats: ***Kyzikos*** (ex-98 *M*), ***Kios*** (ex-99 *M*), ***Kidonia*** (ex-100 *M*). Built at Monfalcone (1914). 241 tons. Dimensions: 197 × 18 × 4·9 feet *max.* draught. Machinery details as *Pergamos* type, above. Armament: 1—11 pdr. Skoda. 2—18" Tubes.

Note.—All three boats underwent a general refit at Piraeus, 1926. Original speed exceeded.

Submarines.

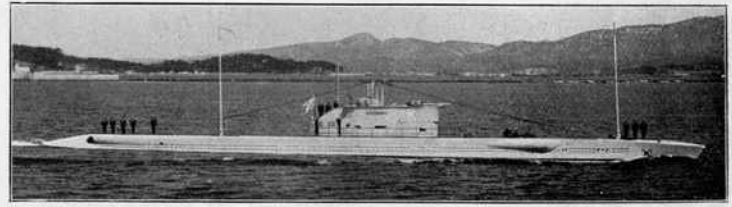
4 Glavkos Class.

GLAVKOS. 1929 *Photo, by favour of M. Henri le Masson.*

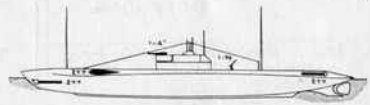


4 *Simonot* type. ***Nereus*** (Dec., 1927), ***Proteus*** (Oct. 24th, 1927), ***Triton*** (April 4th, 1928), all built by At. & Ch. de la Loire, at Nantes, ***Glavkos*** (1928), by Chantiers Navals Francais, at Blainville. Displacement: 700/930 tons (metric). Dimensions: 225 (*p.p.*) × 18·8 × 13·7 *feet.* Machinery (supplied by At. & Ch. de la Loire): On *surface*, 2 sets 2-cycle Sulzer-Diesels, totalling 1420 B.H.P. for 14 kts.; *submerged* 1200 B.H.P. for 9½ kts. Endurance on *surface*: *normal* 1500 miles, *maximum* 4000 miles; both at 10 kts. When *submerged*, 100 miles at 5 kts. Armament: 1—4 inch, 1—3 pdr. AA., 6—21 inch internal bow tubes, 2–21 inch internal stern tubes. Stowage for 8 torpedoes, 150 rounds of 4 inch ammunition. Complement, 41. *Maximum* depth of submergence: 45 fathoms. Approximate cost £119,000 each.

2 Katsonis Class.



KATSONIS. 1929 *Photo, M. Bar, Toulon.*



2 *Schneider-Laubeuf* type. ***Katsonis*** (20 March, 1926), by Ch. de la Gironde, at Bordeaux; ***Papanicolis*** (Nov. 1926, by At. & Ch. de la Loire, at Nantes. Displacement: 576/775 tons. Dimensions: 204½ × (*p.p.*) 17½ × 11 feet. On *surface*, 2 sets of 2-cycle Machinery: Schneider-Careis Diesels, totalling 1300 B.H.P. for 14 kts. *Submerged*, 1000 B.H.P. for 9½ kts. Endurance, on *surface*: *normal* 1500 miles, *maximum* 3500 miles, both at 10 kts: when *submerged*, 100 miles at 5 kts. Armament: 1—4 inch, 1—3 pdr. AA., 2—21 inch internal bow tubes, 2—21 inch external bow tubes, 2—21 inch external stern tubes. Stowage for 7 torpedoes, 100 rounds of 4 inch ammunition. Complement, 39. *Maximum* depth of submergence: 45 fathoms. First boat delivered at Piraeus, Dec. 29th, 1927.

Mine Layers.

Note.—In peace time these vessels are employed as follows: *Pleias* as a Lighthouse Tender, the other three as "Communication Boats" (Despatch Vessels).

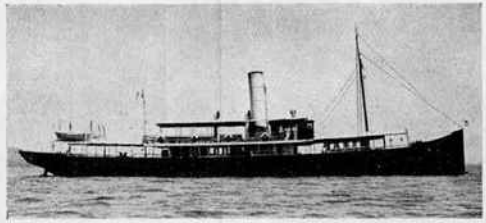
PLEIAS. 1931 *Official Photo.*

PLEIAS (Soc. Italiana Ernesto Breda, Nostre Yard, Venice, 28th April, 1926). Displacement: 520 tons. Dimensions: 162 × 27 × 12½ feet. I.H.P. 1000 = 14 kts. Coal: 90 tons. Carries 50 mines.

1931 *Official photo.*

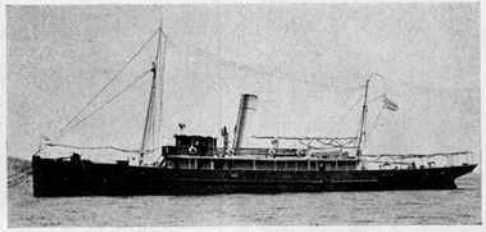
PARALOS (Rotterdam, 1925). Displacement: 395 tons. Dimensions: 150 × 22 × 10½ feet. I.H.P. 550 = 13 kts. Coal: 35 tons. Carries 52 mines.

Mine Layers—*continued.*



1931 *Official photo.*

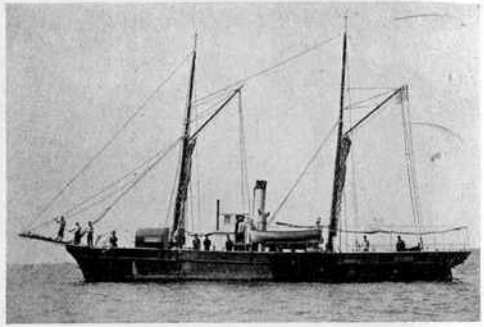
KORGIALENIOS (Rotterdam, 1916). Displacement: 380 tons. Dimensions: 150 × 21½ × 10 feet (depth). I.H.P. 550=13½ kts. Coal: 35 tons. Carries 50 mines.



1931 *Official photo.*

TENEDOS (Glasgow, 1906). Displacement: 460 tons. Dimensions: 142 × 24 × 10 feet (*mean* draught). I.H.P. 560 = 13 kts. Coal: 40 tons. Carries 40 mines.

Old Gunboats



KISSA. 1931 *Official Photo.*

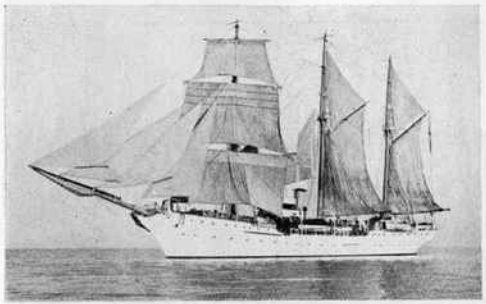
KISSA, KICHLE (Blackwall, 1884). 86 tons. Dimensions: 76 × 16 × 7 feet. I.H.P. 162 = 10 kts. Coal. 20 tons. Guns: Nil. (*Kissa* now used as a Lighthouse Tender).

Surveying Ship.

1931 *Official Photo.*

NAUTILUS (Dumbarton, 1884. Rebuilt 1895-7). 404 tons. Dimensions: 131¼ (*p.p.*) × 24½ × 11 feet. Guns: Nil. H.P. 400 = 11 kts. (8 kts. best speed now). Coal: 55 tons. Complement, 60.

Training Ship.



ARES. 1932 *Photo, Official.*

ARES (Forges et Chantiers de la Méditerranée, La Seyne, Jan. 28th, 1927). Steel Barquentine. Displacement: 2200 tons. Dimensions: 208 (*p.p.*) × 39½ × 18 feet. Guns: **4**—3 inch. Auxiliary steam engine (reciprocating) I.H.P. 1000 = 10 kts. 2 oil-fired Babcock & Wilcox boilers. Fitted with lecture rooms, workshops and accommodation for 100 Naval Cadets and 150 Boys. Total complement: 419. Carries an exceptionally full equipment of boats for training purposes.

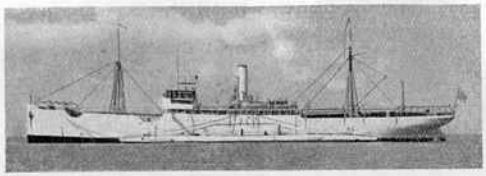
Note.—On trials, H.P. 1144 = 11·38 kts.

Oil Tanker.

1931 *Official Photo.*

PROMETHEUS (Newcastle, 1889.) 3193 tons, *gross* tonnage. Dimensions: 318½ × 42 × 29½ feet depth. I.H.P. 1150 = 10 kts. Carries 4175 tons of oil fuel.

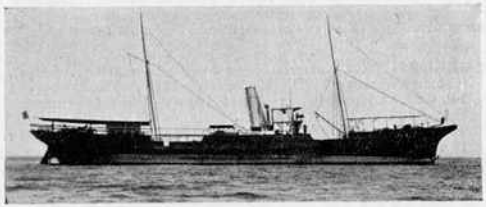
Fleet Repair and Submarine Tender.



1931 *Official Photo.*

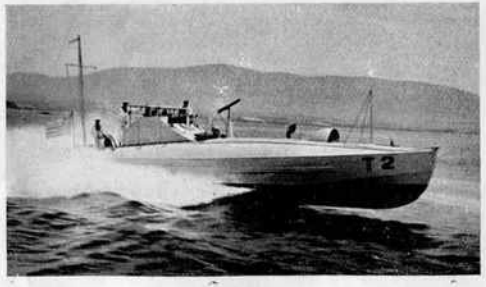
HIFAISTOS (ex-*Khios*) (ex-German Cargo Ship *Marie Reppel*, Rostock, 1920). *Gross* tonnage, 4549. Dimensions: 360½ × 50 × 23 feet. I.H.P. 2500 = 11½ kts. Guns: **4**—4 inch AA. Converted into a Repair Ship by Messrs. Palmers, Jarrow-on-Tyne, 1925. Fitted with up-to-date workshops and plant.

Water Carrier.

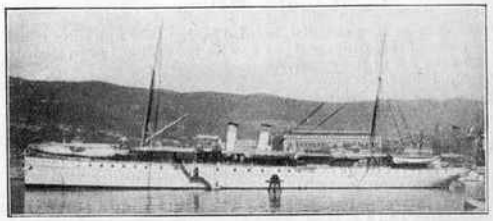


1931 *Official Photo.*

AVRA (Greenock, 1894, reconstructed, 1918). Displacement, 1221 tons. Dimensions: 210 × 29 × 14 feet. I.H.P. 695 = 12 kts. Coal: 110 tons. Water capacity: 750 tons.

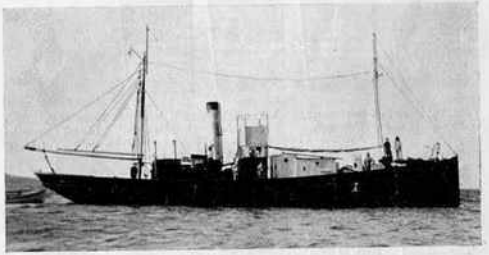


Hospital Ship.



AMPHITRITI (Birkenhead, 1876.) 1172 tons displacement. Dimensions: 206 × 30½ × 16½ feet depth. I.H.P. 1630 = 13½ kts. Coal: 160 tons. Originally built as troopship. Rebuilt 1885 as Royal Yacht. Converted 1918 as Naval Hospital Ship.

Mine Sweeping Trawlers.



1931 *Official Photo.*

Y1, Y2 (Leith, 1910). Displacement, 140 tons. Dimensions: 85 × 18 × 6½ feet draught. I.H.P. 200 = 10 kts. Guns: **1**—12 pdr. Krupp, **1** M.G. Purchased from British Admiralty, 1918.

Two Thornycroft 55 ft. type (1929). Two motors each 375 H.P. = 37 kts. (40 kts. reached on trials.) **2** Lewis guns, **2**—18 inch torpedoes, **4** D.C.

One of Thornycroft 45 ft. type (1921). Y 12 type motor of 350 B.H.P. = 38 kts. No armament. Complement, 3.

HUNGARY.

Officially revised 1933.

(Danube Flotilla).

Flag.—Ensign is rectangular, divided horizontally into three equal parts of red, white and green, with the national arms slightly to the left of the centre.

Principal Base.—Budapest.

Under Law XIV of 1922, the Royal Hungarian Riverguard (M. Kir. Folyamorseg) was established for police purposes on the Danube.

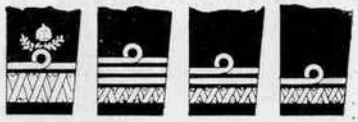
The maintenance of the following craft is permitted :—
- 8 Patrol Vessels of 128 tons each *maximum*, armed with 2—70 m/m. and 2 M.G.
- 2 Motor Launches, of 20 to 30 tons each, armed with 1—47 m/m. and 1 M.G.
- 10 Motor Boats, of 12 to 20 tons each, armed with 1 M.G.

The total strength of personnel must not exceed 96 officers and 1524 petty officers and men. The Royal Hungarian Riverguard is under the control of the Ministry of the Interior.

Colour of Ships: Khaki, and Green below waterline.

Mercantile Marine (1925).—7 ships, of 31,790 tons *gross*.

Insignia of Rank.



Vezérkapitany. (*Rear-Admiral.*) | Fökapitany. (*Captain, senior.*) | 1 Törzskapitany. (*Captain, junior.*) | 2 Törzskapitany. (*Commander.*) | Kapitany. (*Lieut.-Commander.*)

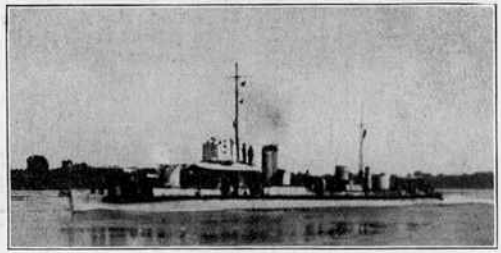
Föhajónagy. (*Lieut.*) | Hajónagy. (*Sub-Lieut.*) | Gyakornok. (*Midshipman.*)

Without curl, and with colour between stripes :—
- *Surgeons* : Black velvet.
- *Engineers* : Cherry-coloured cloth.
- *Constructors* : Cherry-coloured velvet.
- *Paymasters* : Red cloth.
- *Musical Directors* : Violet cloth.

Uniform Cap.—Same shape as the former Austro-Hungarian cap. Badge is a golden anchor surrounded by a laurel wreath and surmounted by the Holy Crown of Hungary.

4 River Patrol Boats.

(Ex-Austro-Hungarian.)



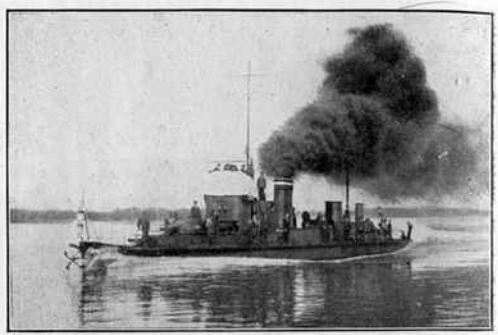
DEBRECEN. (Masts now of equal height.) 1925 *Official Photo.*

DEBRECEN (ex-*Komaron*, ex-Austro-Hungarian *Lachs*), (Ganz-Danubius Yard, Budapest, 1918). Displacement : 140 tons. Dimensions : 149¼ × 19½ × 3½ feet *mean* draught. H.P. 1400 = 15 kts. A.E.G. turbines. 2 Yarrow boilers. Tunnel screws. Guns : 2—3 inch, 2 M.G. 1 S.L. Oil fuel : 18 tons. Complement, 44. Refitted 1924.

1933 *Photo, Official.*

GYOR (ex. Austro-Hungarian *Stöhr*). (Ganz-Danubius Yard, Budapest, 1918). Refitted 1928.

Details as *Debrecen* above.



SZEGED. 1925 *Official Photo.*

SZEGED (ex-*Bregainica*, ex-Austro-Hungarian *Wels*, 1915), **KECSKEMÉT** (ex-Austro-Hungarian *Viza*, 1916). Both built at Ganz-Danubius Yard, Budapest. Displacement : 133 tons. Dimensions : 144½ × 16½ × 3½ feet *mean* draught. H.P. 1100 = 15 kts. A.E.G. turbines. 2 Yarrow boilers. Tunnel screws. Guns : 4—3 inch, 2 M.G. 1 S.L. Oil fuel : 18 tons. Complement, 44. *Szeged* refitted 1921, *Kecskemét*, 1923.

Depot Ship.

CSORÁNC. 1933 *Photo, Official.*

(Ganz-Danubius Yard, Budapest, 1928).
300 tons. Dimensions : 132 × 18 × 4½ feet.
H.P. 180 = 8 kts. 2 Diesels. Tunnel screws.
Oil = 8 tons. Complement, 18.

In addition to the above, there are a number of small Motor Launches and Guard Boats.

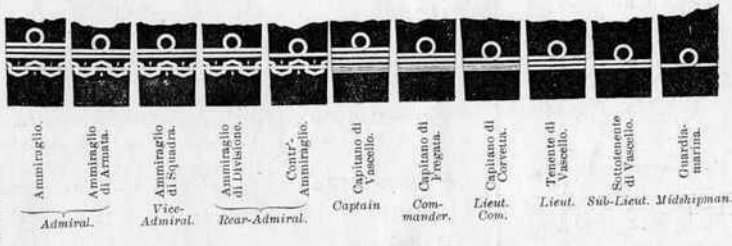
ITALY

Officially corrected by courtesy of the Ministry of Marine, 1933.

Uniforms.

(*Note.*—A five pointed silver star is worn on lapel of coat.)

INSIGNIA OF RANK ON SLEEVES.



The ranks of Grande Ammiraglio (four stripes) and of Ammiraglio (three stripes) can only be conferred for special merit on flag officers who have commanded fleets in time of war. The rank of Ammiraglio has now been abolished, except "ad personam" to the Royal Princes.

Lesser ranks are: Aspirante; Allievo dell' Accademia Navale (*Naval Cadet*).

Other branches distinguished by following Colours: Armi Navali (*Ordnance Constructors*), yellow-brown; Genio Navale (*Naval Constructors* and *Engineers*), dark purple; Sanitario (*Doctors*), blue; Commissariato (*Paymasters*), red; Chemists, green; Harbour Masters, grey-green.

Note.—All officers under arms on duty wear a blue sash over right shoulder, ending in a blue knot at left hip; worn with belt. Officers on staff duty wear it on opposite shoulder, and without belt. Tropical white tunic has insignia of rank on shoulder straps, with stars as stripes. Senior lieutenants wear a piece of gold under the stars of shoulder strap.

Navy Estimates

1931-32.	1,573,622,800 lira Italian.	
1932-33.	1,574,923,277	,, ,,
1933-34.	1,397,222,277	,, ,,

Total Personnel: Officers, 2,440. Men, 50,000.

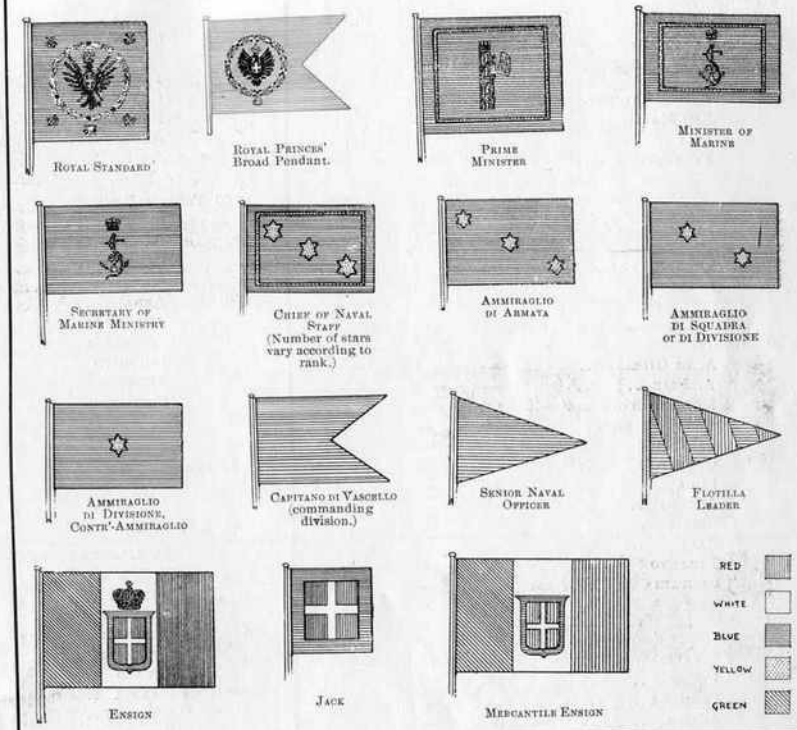
Minister of Marine: Ammiraglio di Divisione Giuseppe Sirianni.

Secretary of Marine Ministry: Generale Ispettore del Genio Nav. (R.N.) Gioacchino Russo.

Chief of Naval Staff: Ammiraglio di Squadra Gino Ducci.

Naval Attaché, London: Capitano di Vascello A. Iachino.

Flags.



Mercantile Marine.

From "Lloyd's Register" 1933 figures.

1,052 vessels of 3,092,772 gross tonnage.

SUMMARY OF NAVAL FORCES

	Building	Under age	Over age
4 *Battleships.*			
Duilio	—	2	—
Cavour	—	2	—
4 *Old Armoured Cruisers.*			
San Marco	—	—	2
Pisa	—	—	1
Ferruccio	—	—	1
7 *Large Cruisers.*			
Trento	—	2	—
Zara	—	4	—
Bolzano	—	1	—
20 *Cruisers.*			
A. di Giussano	—	4	—
A. Diaz	—	2	—
Montecuccoli	2	—	—
E. Filiberto	2	—	—
Garibaldi	2	—	—
Quarto	—	—	1
Libia	—	—	1
Ancona	—	—	1
Brindisi	—	—	2
Bari	—	—	1
Taranto	—	—	1
Campania	—	—	1
20 *Scouts (large destroyers).*			
"Navigatori"	—	12	—
Leone	—	3	—
Premuda	—	—	1
Aquila	—	—	2
C. Mirabello	—	—	2
40 *Destroyers.*			
Maestrale	4	—	—
Dardo	—	8	—
Borea	—	8	—
Sauro	—	4	—
Sella	—	4	—
Palestro	—	8	—
C. Rossarol	—	—	1
Poerio	—	—	2
Ardimentoso	—	—	1
40 *Torpedo Boats.*			
Spica	4	—	—
"Generali"	—	—	6
Cosenz	—	—	7
Sirtori	—	—	4
Abba	—	—	8
Audace	—	—	1
Cortellazzo	—	—	4
Indomito	—	—	4
Ardente	—	—	1
Fuciliere	—	—	1
32 *Coastal Torpedo Boats*	—	—	32
75 *Submarines.*			
Fieramosca	—	1	—
P. Micca	1	—	—
Balilla	3	4	—
Corridoni	—	2	—
Santarosa	—	4	—
Settembrini	4	2	—
Squalo	2	4	—
Mameli	—	4	—
Pisani	—	4	—
Emo	—	—	3
Nani	—	—	1
Argonauta	12	7	—
"N"	—	—	3
"F"	—	—	5
"H"	—	—	7
"X"	—	—	2
1 *Aircraft Tender.*			
Miraglia	—	1	—
17 *Minelayers.*			
Lepanto	—	6	—
Albona	—	3	—
Brondolo	—	—	2
Buccari	—	4	—
Cotrone	—	2	—
38 *Minesweepers*	—	38	—
18 *Gunboats.*			
Bafile	—	5	—
E. Carlotto	—	1	—
Caboto	—	1	—
Various	—	10	—
Aurora	—	1	—
5 *Monitors.*			
F. di Bruno	—	1	—
"Monte" *class*	—	4	—
52 *Submarine Chasers.*			
Various	4	48	—
2 *Training Ships.*			
C. Colombo	—	2	—
43 *Auxiliaries.*			
Depôt Ships	—	3	—
Survey, etc.	—	5	—
Salvage	—	2	—
Transports	—	33	—
Fuel, etc.			

OFFICIAL TABLE OF NAVAL ORDNANCE. (Revised, 1931.)

Official Designation.—Calibre mm length cal. Mark A=Armstrong, V=Vickers An=Ansaldo, S=Schneider. Date of introduction. Mark O.T.O.=Odero-Terni-Orlando.	305/46 A., V. 1909	254/45 A. 1907	254/45 V. 1906	203/53 An. 1929	203/50 S.-An. 1924	190/45 A., V. 1908-1906	152/53 An. O.T.O. 1927-29	152/50 A. 1918	152/45 S. 1911	120/50 An. 1926.	120/50 A., V. 1909	120/45 A. 1918	102/45 S.-A. 1917	102/35 S. 1914-15	100/47 O.T.O. 1929	76/50 A., V. 1909	76/45 S. 1911	76/40 A. 1916	76/17 S. 1912
Designation by Calibre, c/m. ..	30.479	25.4	25.4	20.3	20.3	19.05	15.24	15.24	15.24	12	12	12	10.2	10·2	10.0	7.62	7.62	7.62	7.62
Calibre, in inches	**12**	**10**	**10**	8	**8**	**7.5**	**6**	**6**	**6**	**4.75**	**4.75**	**4.75**	**4**	**4**	**3.9**	**3**	**3**	3	**3**
Lengths: Total, in feet	47 77	39.07	38.715	36.545	34·593	29.22	27.83	25.94	23.42	19.57	20.38	18.38	15.715	12.247	15.721	13.271	11.722	10.292	4.593
Lengths: Rifled Bore, in inches	477.9	358.4	370.5	358.66	——	281.7	——	256.6	219.2	——	204.64	174.64	150.74	114.29	12.365	126	107.2	101.57	44.88
Lengths: Powder Chamber, in inches ..	97.7	74.91	74.91	64.66	——	51.65	——	44.6	44.6	——	28.64	35.03	27.16	23.50	3.112	22	25.4	——	—
Lengths: Bore, in calibres	37.3	35.84	37.05	——	——	37.5	——	42.77	36.54	——	43.31	36.96	37.53	28.46	15.371	42	35.73	28.42	14.96
No. of Grooves	72	60	70	52	52	44	44	36	56	36	36	36	40	32	26	28	24	16	24
Twist of Rifling, in calibres ..	30	30	00-30	——	30	00-30	30	33	36	30	30	30	——	——	30	30	35.9	33	22
Total Weight, in tons	62.99	34.48	35.339	19·170	20.800	14.478	7.700	8.100	7.025	3.00	3.662	4.035	2.327	1.200	2.020	1.122	0.698	0.660	0.104
Firing Charge: Armour-piercing projectile lb.	346	185	185	111. 994	103.19	70.987	43	——	——	19	——	——	——	——	——	——	——	——	——
Firing Charge: Common Shell H.E., lb. ..	279.9	185	185	——	——	70.987	——	32.79	30.64	——	14.66	9.589	9.479	6.50	10.319	3.02	3.571	2.281	0.529
Weight: Armour-piercing projectile, lb.	997.2	494	494	275.573	269	200.39	103.5	——	——	50.5	——	——	——	——	——	——	——	——	——
Weight: Shell H.E., lb.	884.4	489.8	489.8	——	——	498.5	——	110.22	103.61	——	48.74	48.74	30.31	30.31	30.318	14.05	14.05	13.954	11.68
Weight: Shrapnel, lb.	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	11.68
Bursting Charge: Armour-piercing projectile, lb.	16.63	4.37	4.37	——	——	2.332	——	——	——	——	——	——	——	——	——	——	——	——	——
Bursting Charge: Shell H.E., lb.	53.13	29.86	29.86	——	——	11.706	——	5.996	7.528	——	2.711	2.711	2.866	2.866	——	1.102	1.102	——	0.782
Bursting Charge: Shrapnel, lb.	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	0.165
Muzzle Velocity, in ft. secs. ..	2755.9	2788·77	2788.77	3031.180	2743.20	2788.77	2785	2854	2723	2786	2788	2460	2788	2461	2438.40	2460	2460	2214	1230
Muzzle Energy —Total tons per sq. inch ..	18.63	17.71	17.71	——	——	17.98	——	18.37	16.86	——	18.37	15.75	18.37	18.37	——	18.37	15.75	——	12.47

Note.—German 5·9 in. and 4·1 in.; Austrian 3·9 in., retained in ex-enemy L.C., and T.B.D's. An old Armstrong 10 in., 40 cal., is still mounted in training cruiser *F. Ferruccio*.

12″ 46 cal. *Duilio* class (2 ships), *Cesare* class (2 ships).
10″ 45 ,, *S. Marco* class (2 ships) and *Pisa*.
8″ 53 ,, *Zara* class.
8″ 50 ,, *Trento* classes.
7.5″ 45 ,, *San Marco* class (2), and *Pisa*.
6″ 53 ,, *Condottieri* class.
6″ 45 ,, *Duilio* class (2 ships).
4.7″ 50 ,, *Cesare* class (2 ships), *Quarto*, *Libia*, and *Navigatori* class.
3.9″ 47 ,, *Trento* class, *Zara*, and *Condottieri* class.

Displacement.

Now given in English Tons, "Standard" calculation.

Directors, Rangefinders, &c.

Supplied by the Galileo and S. Giorgio Companies, of Florence and Genoa, respectively. Rangefinders are of a new model both co-incident and stereoscopic, of 5 and 7.20 metres base for main armament and 3 metres for secondary guns.

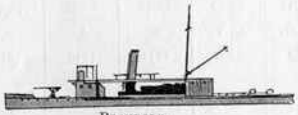
Programmes

	1929	1930	1931	1932	1933
Cruisers	*Gorizia Diaz Bolzano Cadorna*	*Pola Montecuccoli Muzio-Attendolo*	*E. di Savoia Duca d'Aosta*	*G. Garibaldi D. Degli Abruzzi*	
Destroyers	4 *Folgore*	4 *Maestrale*	—	—	
Torpedo Boats ..	—	—	*Spica Astore*	2	
Submarines	7 *Argonauta*	4 large 6 medium 12 small	—	—	
			1,573,622,800 *lire*	1,574,923,277 *lire*	1,397,222,277 *lire*

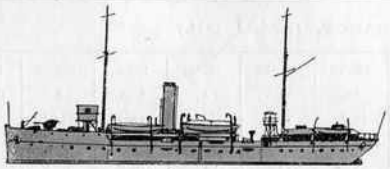
Torpedoes.

Supplied by Silureficio Italiano di Fiume.

Cal. 533·4 mm. *Range* 7,200 m. *Charge* 250 kg. *Speed*, 4,000 m.=50 kts, 8,000=39 kts., 12,000=30 kts. 6,000 m.=43 kts., 10,000 m.=34 kts.



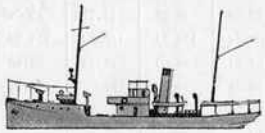
BRONDOLO.
MARGHERA.
(Minelayers.)



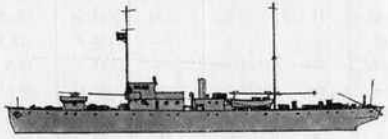
S. CABOTO.

RD 31 *type.*

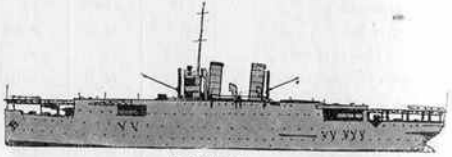
A. BAVILE *class* (5).



GEN. ARIMONDI.



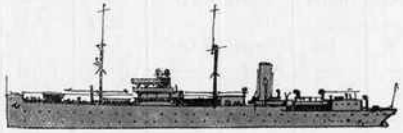
FASANA *class.*



G. MIRAGLIA.

CIRENE.

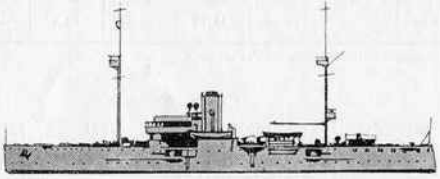
PANIGAGLIA *class* (3).
(Munition Carriers.)



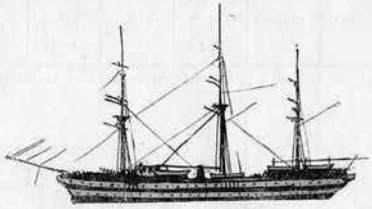
QUARNARO.

E. CARLOTTO.

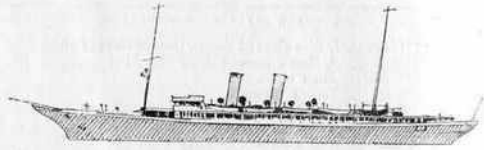
PALMAIOLA.



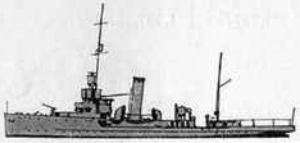
CAMPANIA



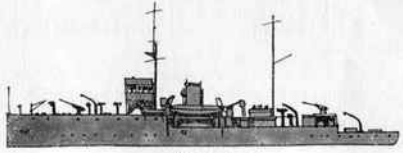
C. COLOMBO. A. VESPUCCI.



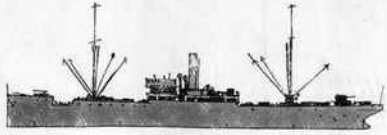
SAVOIA.
(Royal Yacht.)



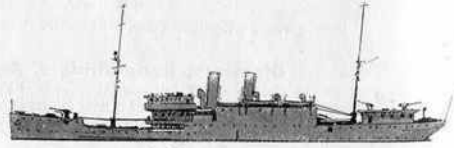
COTRONE.
VIESTI.



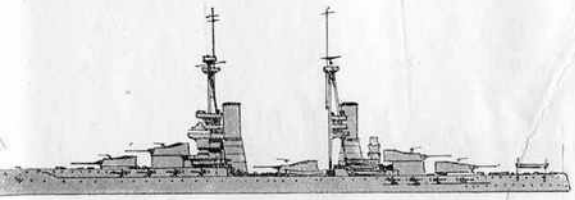
OSTIA *class.*



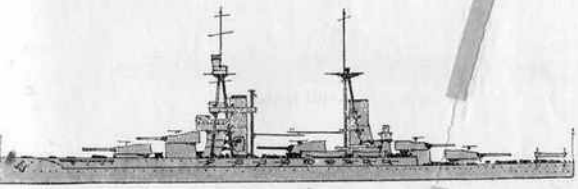
CHERSO.
LUSSIN.



A. PACINOTTI.
A. VOLTA.

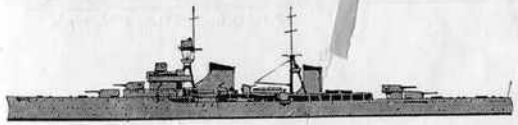


DORIA, DUILIO.



CAVOUR, CESARE.

CONDOTTIERI *class.* "A" *type.*



A. DIAZ. L. CADORNA.

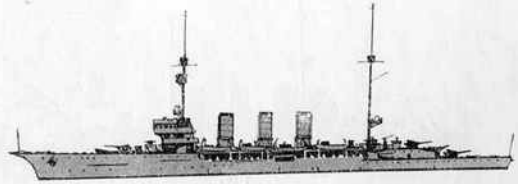
ZARA. FIUME.

GORIZIA.

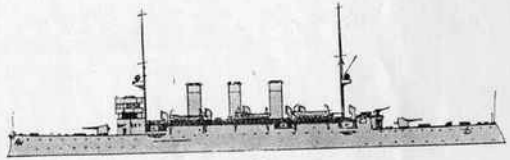
POLA.

BOLZAND.

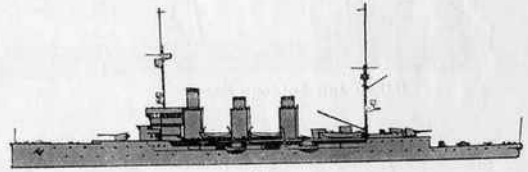
TRENTO, TRIESTE.



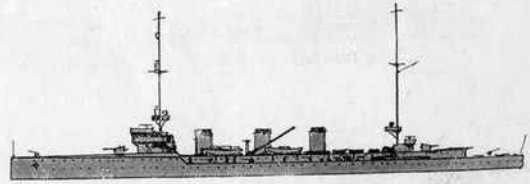
ANCONA.



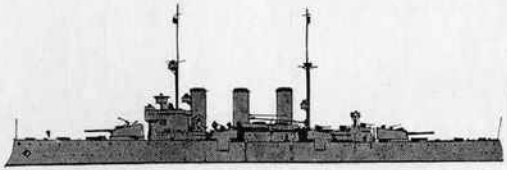
LIBIA.



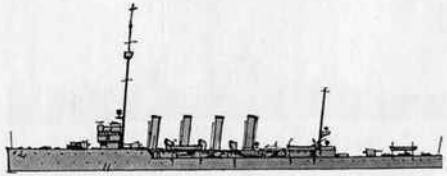
BARI.



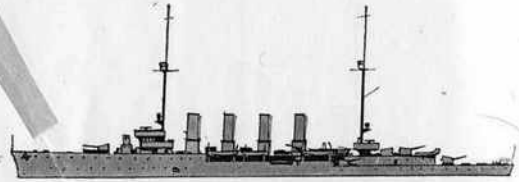
QUARTO.



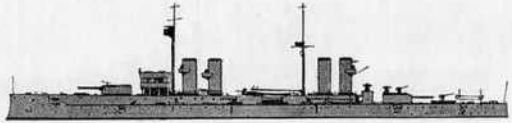
PISA.



BRINDISI, VENEZIA.



TARANTO.

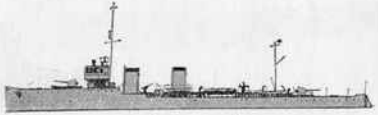


SAN GIORGIA. SAN MARCO.

ARDIMENTOSO.

DARDO AND FOLGORE *class.*

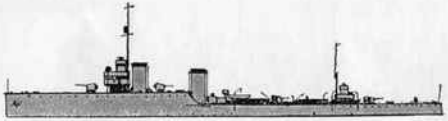
C. MIRABELLO *class.*



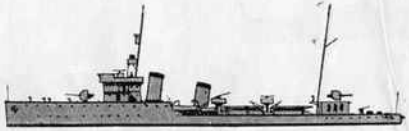
CURTATONE *class.*

AUDACE.

PREMUDA.



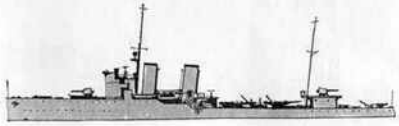
LEONE *class.*



F. NULLO *class.*

T.B. O.L. A.S.O.S. P.N. *types.*

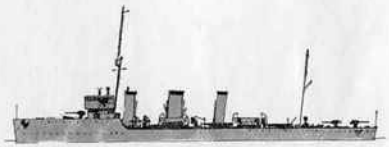
A. POERIO *class.*



Q. SELLA *class.*

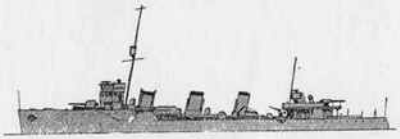
NAVIGATORI *class.*

COASTAL BOATS O.L.T. *type.*

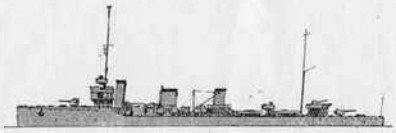


ABBA, INDOMITO & ARDENTE *classes.*

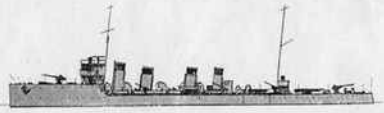
SIRTORI, COSENZ, & GENERALI *classes.*



AQUILA, FALCO.



C. ROSSAROL.



CORTELLAZZO *class.*

H *class.*

X 2, X 3.

F *class.*

N 6.

N 3, N 4.

L. SETTEMBRINI *class.*

MENOTTI *class.*

A. EMO *class.*

G. NASI.

FIERAMOSCA

G. MAMELI *class.*

BALILLA *class.*

BALILLA *class.*

V. PISANI *class.*

1912 BATTLESHIPS (*Navi da Battaglia di 1ª Classe*).

(Duilio Class—2 Ships).

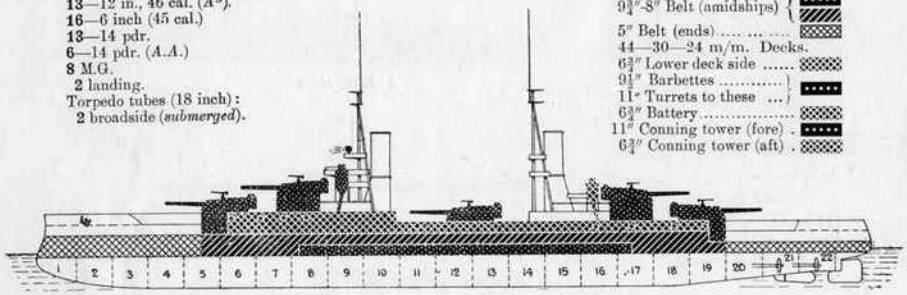
DUILIO (ex-*Caio Duilo*, April, 1913) and **DORIA** (ex-*Andrea Doria*, March, 1913).

Standard displacement, 21,555 tons; *normal* displacement, 22,930 tons. Complement, 1198.

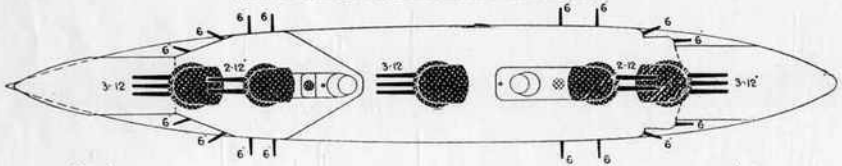
Length (*p.p.*) 554·3 feet. Beam, 91·8 feet. *Mean* draught, 30·7 feet. Length *over all*, 575 feet, 9ins.

Guns (Armstrong or Vickers):
13—12 in., 46 cal. (*A*[5]).
16—6 inch (45 cal.)
13—14 pdr.
6—14 pdr. (*A.A.*)
8 M.G.
2 landing.
Torpedo tubes (18 inch):
2 broadside (*submerged*).

Armour (Terni):
9¾″-8″ Belt (amidships)
5″ Belt (ends) ....
44—30—24 m/m. Decks.
6¾″ Lower deck side .....
9¼″ Barbettes .....
11″ Turrets to these ...
6¾″ Battery.....
11″ Conning tower (fore) .
6¾″ Conning tower (aft) .



(Belt at bow and stern should be a deck higher).



Ahead:
5—12 in.
4—6 in.

Broadside: **13**—12 in., **8**—6 in.

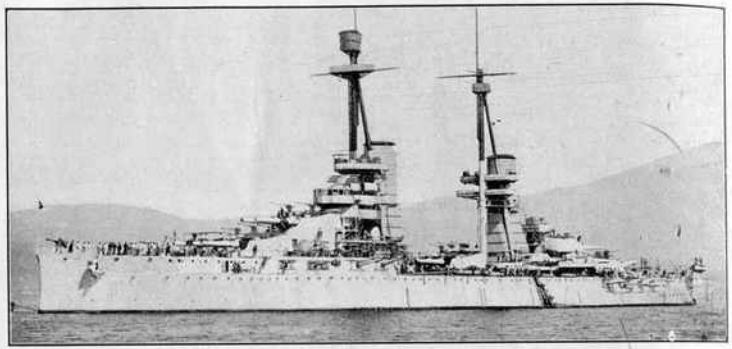
Astern:
5—12 in.
4—6 in.

Machinery: Parsons turbine. 4 screws. Boilers: 20 Yarrow (small tube). Designed S.H.P. 24,000 = 22 kts., but actually need 33,000–35,000 S.H.P. for this speed. Coal: *normal* 580 tons; *maximum* 1450 tons + oil fuel: *normal* 340 tons, *maximum* 850 tons = about 4000 miles at 10 kts. and 2600 miles at 19 kts.

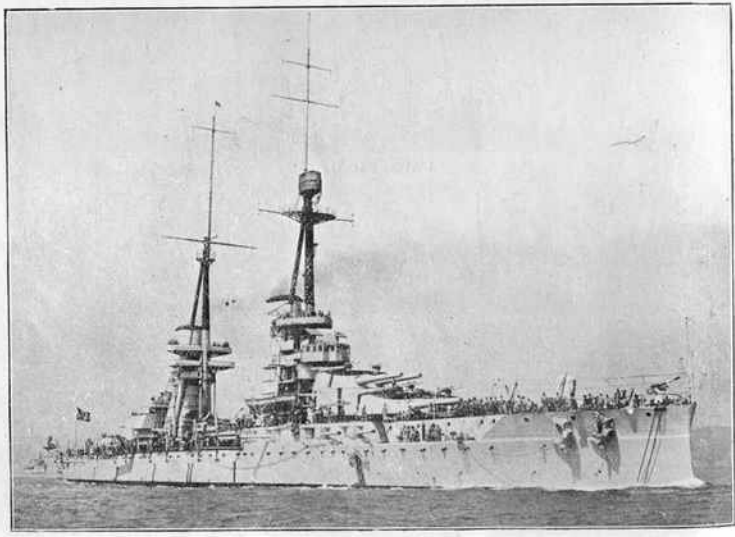
†*Gunnery Notes:* As *Cavour* class on next page. Range-finders mounted to the rear of roof of each barbette shield in armoured hoods and over each C.T. 3 inch (14 pdrs.) are 50 cal. Armstrong or 60 cal. Vickers. 8 searchlights. †All details unofficial.
†*Torpedo Notes:*

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials H.P.=kts.*	*Boilers*	*Best recent speed*
Duilio	Castellamare D.Y.	Ansaldo	Apr.'12	1915	31,000=21·5 at 22,135 tons	Yarrow	23?
Doria	Spezia	Ansaldo	Mar.'12	May '15	34,000=21. at 23,620 tons.	Yarrow	

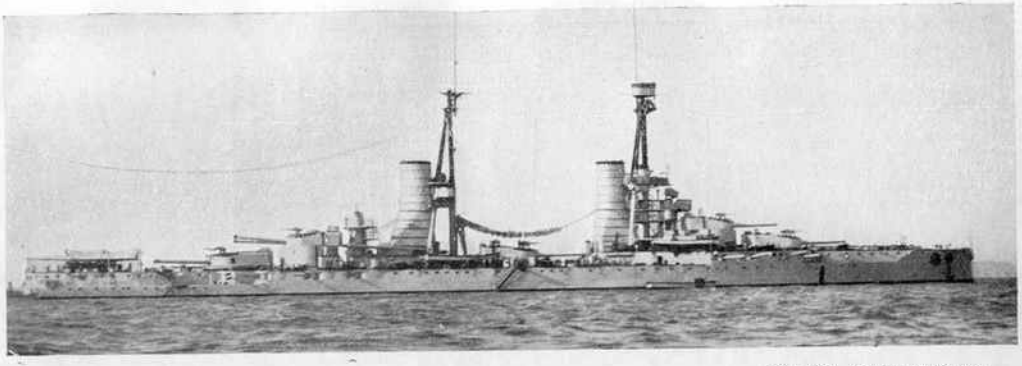
General Notes.—Are improved *Cavour* design, 16—6 inch being substituted for 18—4.7 inch. Otherwise—and excepting altered appearance—there is very little difference between the classes. Machinery, main guns, hull form and internal sub-division, exactly as *Cavours*, and also with same form of triple bottom. Designed by Engineer-Gen. Masdea. These ships exceed their designed displacement of 22,500 tons in the same manner as *Cavour* and *Cesare*, and require to develop 10,000 S.H.P. in excess of designed S.H.P., to reach their designed speed.



Doria. 1924 *Official Photo.*

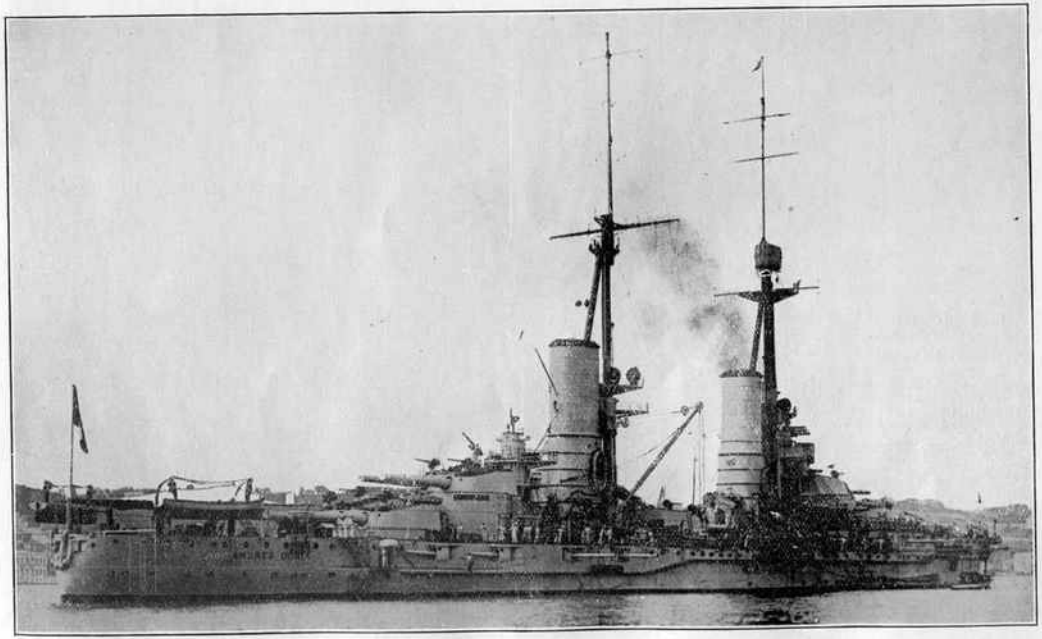


Duilio. 1924 *Official Photo.*



DUILIO.

1931 *Photo. Capitan Mateo Mille.*



DORIA.

Photo added 1927

(Cesare Class—2 Ships).

CAVOUR (ex-*Conte di Cavour*, Aug., 1911), **CESARE** (ex-*Giulio Cesare*, Oct., 1911).

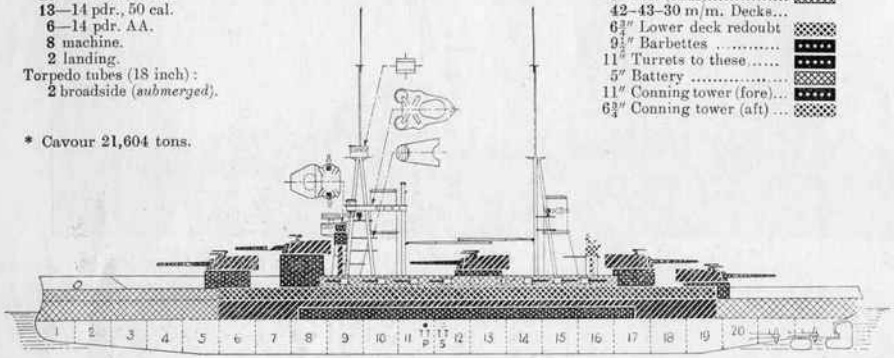
Standard displacement, 21,818* tons. *Normal* displacement: *Cavour*, 23,089 tons, *Cesare*, 22,380 tons. Complement, 1197.

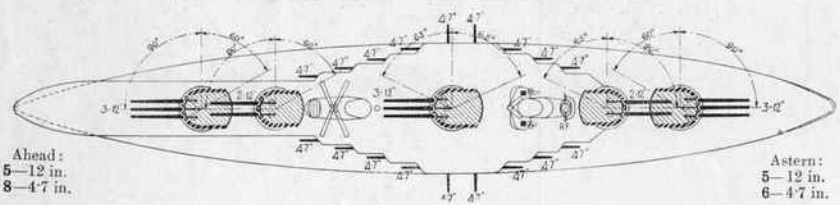
Length (*p.p.*) 554·3 feet. Beam, 91·8 feet. *Mean* draught, 30·7 feet. Length *over all*, 557 feet 9 inches.

Guns (Armstrong):
13—12 in., 46 cal.
18—4·7 inch, 50 cal.
13—14 pdr., 50 cal.
6—14 pdr. AA.
8 machine.
2 landing.
Torpedo tubes (18 inch):
2 broadside (*submerged*).

* Cavour 21,604 tons.

Armour (see *Notes*):
9¾"–8" Belt (amidships)
5" Belt (ends)
42–43–30 m/m. Decks...
6¾" Lower deck redoubt
9¾" Barbettes
11" Turrets to these
5" Battery
11" Conning tower (fore)...
6¾" Conning tower (aft)...





Ahead:
5—12 in.
8—4·7 in.

Astern:
5—12 in.
6—4·7 in.

Broadside: **13**—12 in., **9**—4·7 in.

Machinery: Parsons turbine. 4 screws. Boilers: various, see *Notes*. Designed S.H.P. 24,000= 22 knots, but actually require 32,000 to 32,500 S.H.P. for this speed. Coal: *normal* 580 tons; *maximum* 1450 tons. Oil: *normal* 340 tons, *maximum* 850 tons. Endurance: about 4540 miles at 10 kts., and 2900 miles at 19 kts.

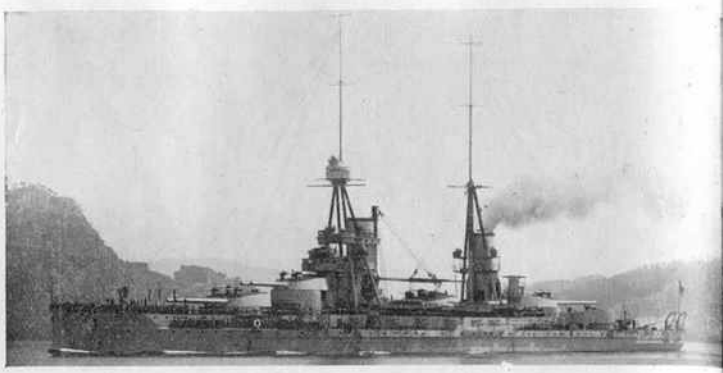
Gunnery Notes.—Arcs of fire: End triples 300°, super-firing twin barbettes 310°, amidships triple 130° each beam. 14 pdr. can be transferred to different mountings in various positions in these ships. These notes are unofficial.

Armour Notes.—*Cavour*, Terni; *Cesare*, Bethlehem. Hull has triple bottom around keel. Usual Torp Pro. Bulk'hd's over machinery and magazine spaces, but it is officially admitted such protection is inadequate to-day. Triple turret, armour guns, mountings, weighs about 700 tons, twin turret, about 500 tons.

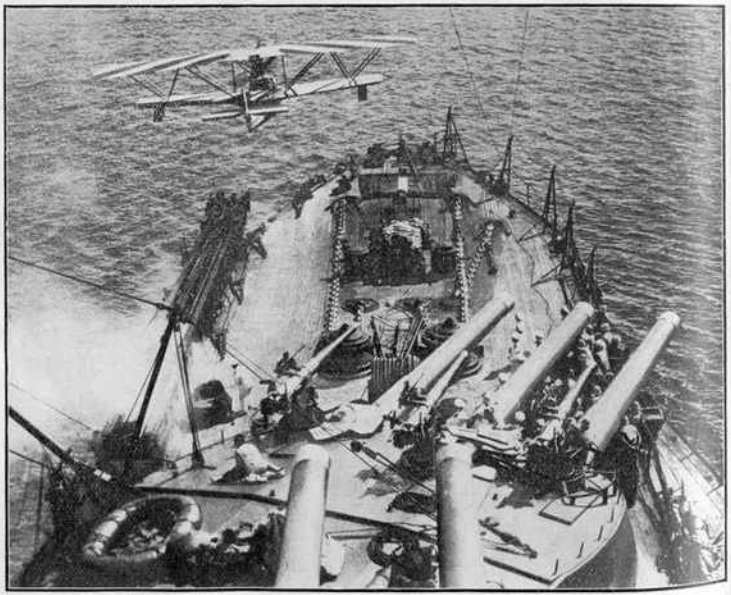
Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials Full Power*		*Boilers*	*Best recent speed*
					H.P.	*kts.*		
Cavour	Spezia D.Y.	Orlando	Aug.,'10	Jan.,'15	31,278	22	20 Blechynd'n	
Cesare	Ansaldo	Ansaldo	Jan. '10	Mar.'14	30,100	21·16	24 Babcock	

General Notes.—Designed by Engineer Gen. Masdea, 1908. Were designed to displace 22,500 tons at 27½ feet *mean* draught. Alterations during construction added 2000 tons to displacement and 3 feet to *mean* draught. They can only reach their designed speed with difficulty. Third ship of class, *Leonardo da Vinci*, blew up at Taranto, August, 1916, salved and docked upside down 1920. Re-capsized Jan., 1921, and since sold for scrap.

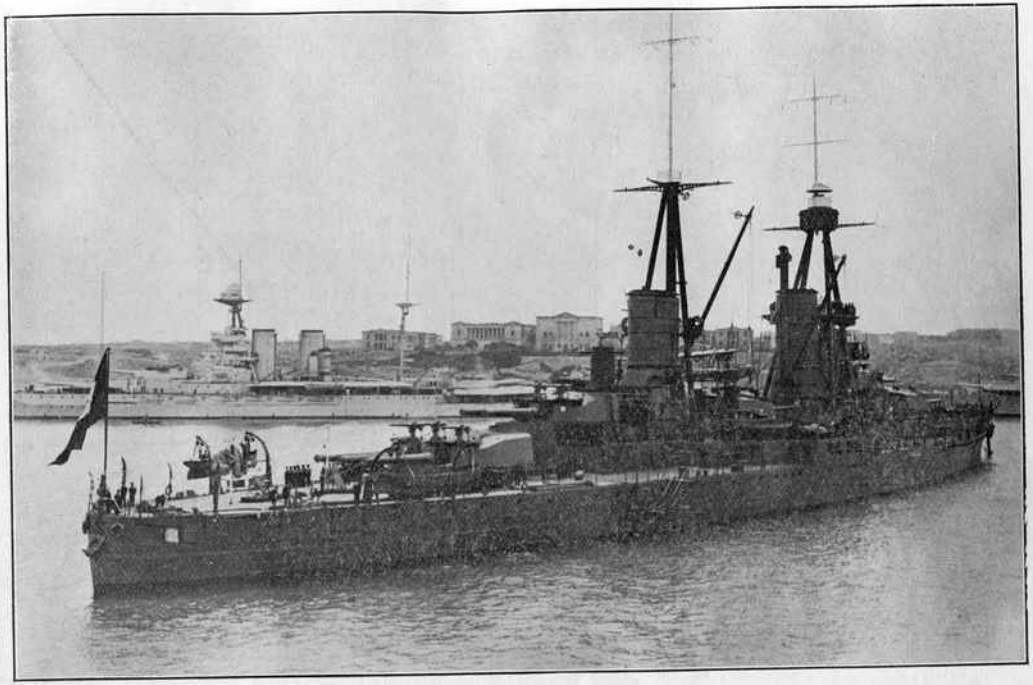
Aircraft Notes.—Catapult on forecastle. Plane is now stowed there instead of amidships, as formerly.



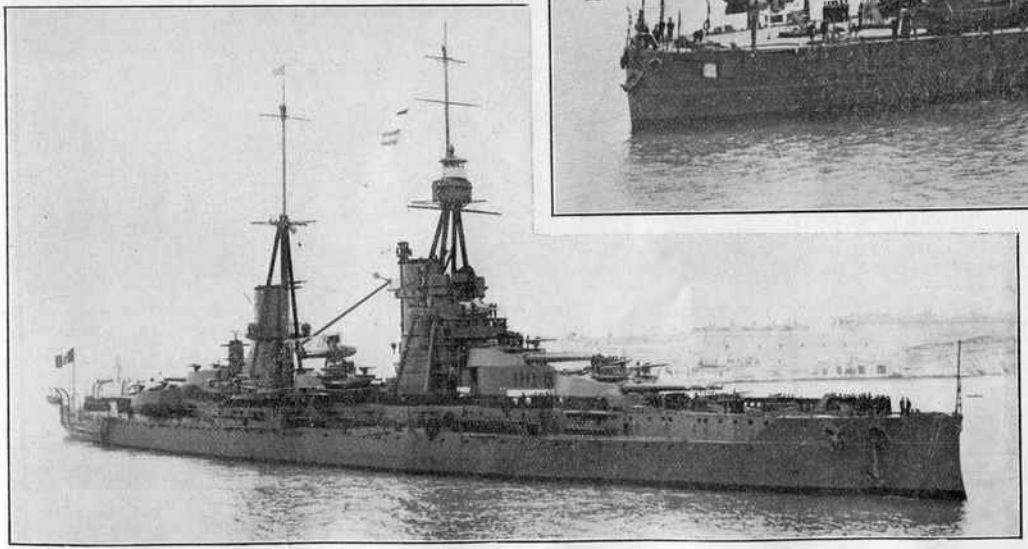
Cavour. 1922 *Photo, by the courtesy of the Ministry of Marine.*



Cavour (showing flight from catapult on forecastle). 1927 *Photo.*



CESARE. 1926 *Photo, Cassar, Malta.*



CAVOUR. 1926 *Photo, Cassar, Malta.*

(San Giorgio Class—2 Ships.)

SAN GIORGIO (July, 1908), **SAN MARCO** (December, 1908).

Standard displacement { *San Giorgio*, 9232 tons. *San Marco*, 9353 tons. } *Normal* displacement { *San Giorgio*, 10,200 tons. *San Marco*, 11,000 tons.

Complement, 726.

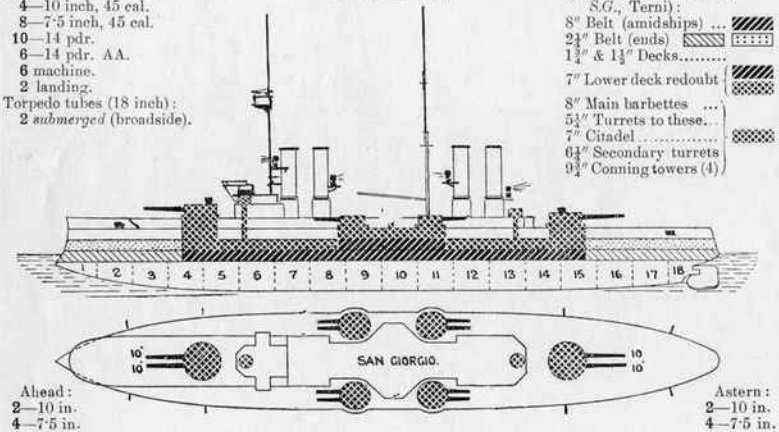
Length (*p.p.*), 429 feet 11 in. Beam, 69 feet. { *S.G. mean* draught: 24 feet, *max.* 26½ feet. *S.M. mean* „ 25½ feet, *max.* 27 feet. }

Length *over all*, 462¼ feet.

Guns:
4—10 inch, 45 cal.
8—7·5 inch, 45 cal.
10—14 pdr.
6—14 pdr. AA.
6 machine.
2 landing.

Torpedo tubes (18 inch):
2 *submerged* (broadside).

Plans revised, 1926.



Armour (*S.M.*, Midvale; *S.G.*, Terni):
8″ Belt (amidships) ...
2¾″ Belt (ends)
1¾″ & 1½″ Decks.....
7″ Lower deck redoubt
8″ Main barbettes ...
5½″ Turrets to these...
7″ Citadel .....
6¼″ Secondary turrets
9¾″ Conning towers (4)

Ahead:
2—10 in.
4—7·5 in.

Astern:
2—10 in.
4—7·5 in.

Broadside: 4—10 in., 4—7·5 in.

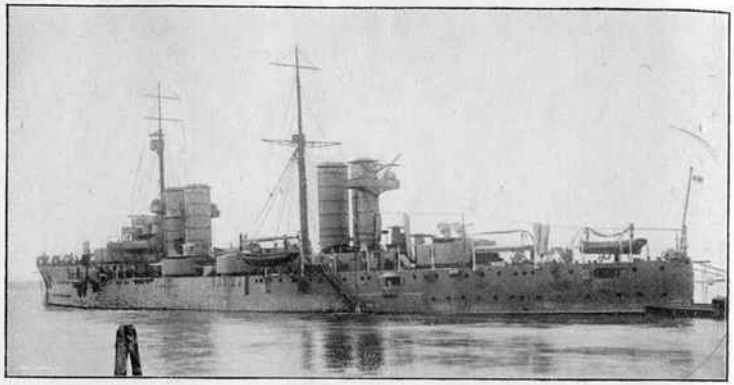
Machinery: *S. Marco*, Parsons turbine; 4 screws. *S. Giorgio*, 2 sets 4 cylinder inverted triple expansion; 2 screws. Boilers: various. See *Notes*. Designed H.P., *S. Giorgio*, 18,000 I.H.P.=22·5 kts.; *S. Marco*, 20,000 S.H.P.=23 kts. Coal: *normal* 700 tons; *maximum* 1570 tons for *S. Giorgio*, 1400 for *S. Marco*. Endurance: at 10 kts., 6270 miles for *San Giorgio*, 4800 miles for *San Marco*; 2640 miles at 20 kts. for *San Giorgio*, about 2500 miles at 21¼ kts. for *San Marco*.

Gunnery Notes.—All guns electrically controlled. Central pivot mountings. Fore 10 inch, 31 feet above waterline; after 10 inch. 22 feet; 7·5 inch guns 22 feet above water.

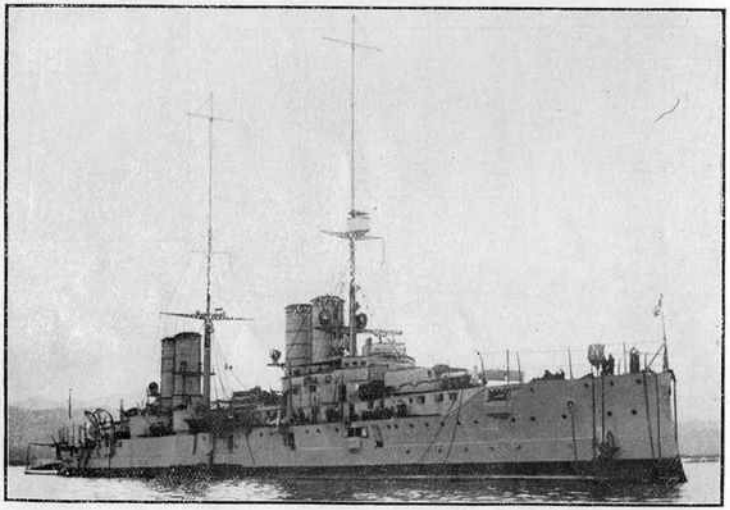
Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials: full power*	*Boilers*	*Best recent speed*
					H.P. Kts.		
S. Giorgio	Castellamare D.Y.	Ansaldo	May,'05	June'10	19,595=23·2 at 9670 tons	14 Blechynden	
S. Marco	Castellamare D.Y.	Ansaldo	Jan.,'07	July'10	23,030=23·75 at 10,175 tons	14 Babcock	

General Notes.—Designed by Engineer Lieut-Gen. Masdea. **In 1913, *S. Giorgio* grounded badly off C. Posillipo (Bay of Naples), but was salved and repaired. She was again badly damaged by stranding in Straits of Messina early in 1914.**

Both have been recently employed as Cadets' Training Ships.



San Marco. (To be converted to a radio-controlled Targetship.) 1925 *Photo, Bassan.*



San Giorgio. 1925 *Photo, Pucci*

To distinguish between these two ships note positions of S.L.

OLD ARMOURED CRUISERS.

Employed as Sea-going Training Ships for Cadets.

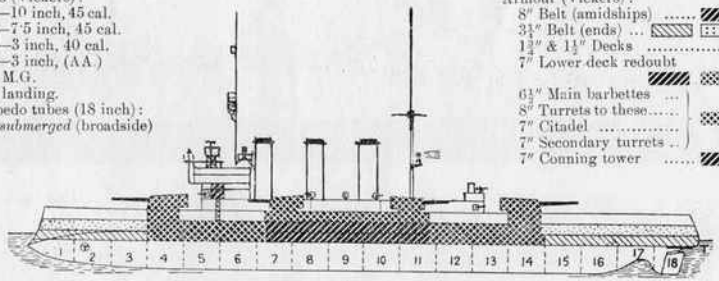
PISA (Sept., 1907).

Standard displacement, 8760 tons. *Normal* displacement, 10,600 tons. Complement, 729.

Length (*p.p.*), 426½ feet. Beam, 68 feet 11 ins. *Mean* draught, 24⅓ feet. *Maximum* draught, 25⅛ feet.
Length *over all*, 460 feet 11 ins.

Guns (Vickers):
4—10 inch, 45 cal.
8—7·5 inch, 45 cal.
12—3 inch, 40 cal.
6—3 inch, (AA.)
4 M.G.
6 landing.
Torpedo tubes (18 inch):
2 *submerged* (broadside)

Armour (Vickers):
8″ Belt (amidships) .....
3½″ Belt (ends) ...
1¾″ & 1½″ Decks .....
7″ Lower deck redoubt
6½″ Main barbettes ...
8″ Turrets to these.....
7″ Citadel .....
7″ Secondary turrets ..
7″ Conning tower .....



Ahead:
2—10 in.
4—7·5 in.

Broadside: 4—10 in., 4—7·5 in.

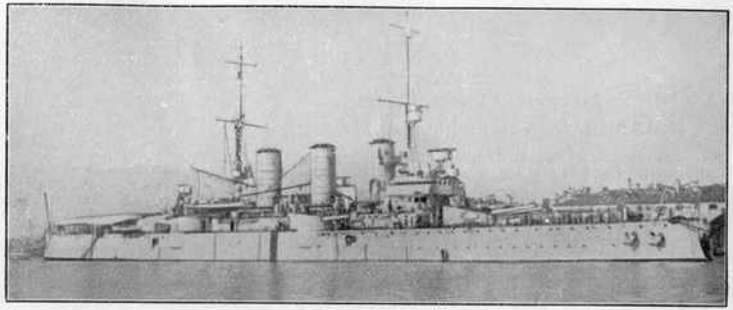
Astern:
2—10 in.
4—7·5 in

Machinery: 2 sets 4 cylinder inverted triple expansion. 2 screws. Boilers: 22 Belleville. Designed H.P. 19,000=22.5 kts. Coal: *normal* 680 tons; *maximum* 1510 tons+140 oil. Endurance: 6,270 miles at 10 kts., 2,300 miles at 21¼ kts.

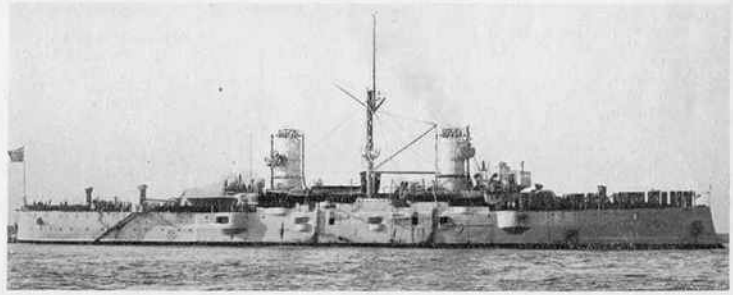
Gunnery Notes.—All guns electrically controlled. Central pivot mountings. Guns 22 feet above water. Secondary armament is being reduced to allow of increased accommodation for cadets.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
Pisa	Orlando, Leghorn	Orlando	July,'05	Dec.,'09	24 hrs. = 21·4 kts. 6 hrs. 20,808=23·5 ,, (at 10,139 tons)	Belleville	

General Notes.—Designed by Ing. Giuseppe Orlando. The *San Giorgio* class (v. preceding page) is a slightly enlarged *Pisa*. A sister-ship, *Amalfi*, lost in the war.



1925 *Photo, Bassan.*



FERRUCCIO. *Photo added* 1932.

FERRUCCIO (Venice 1899-1904).

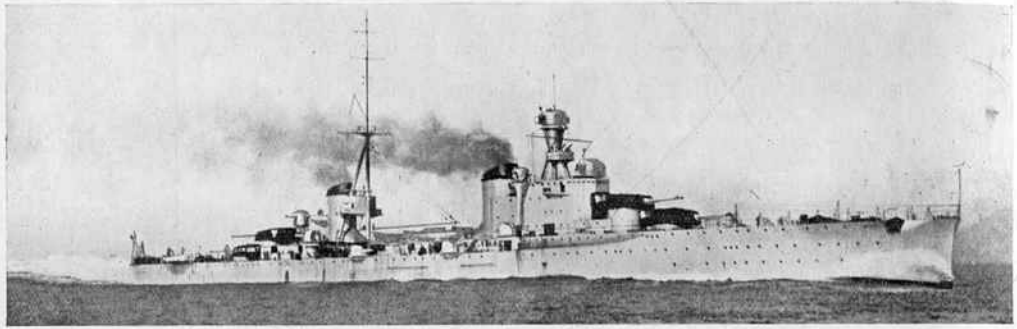
Displacement: 6,299 tons.
Dimensions: 344 × 60 × 24 feet.
Guns: 2—8″
8—3″
H.P. 13,635 = 19.1 kts.

1929 CRUISER.

(Modified "Trento" Type).

BOLZANO. Ansaldo, Sestri-Ponente. (Sept, 1932).

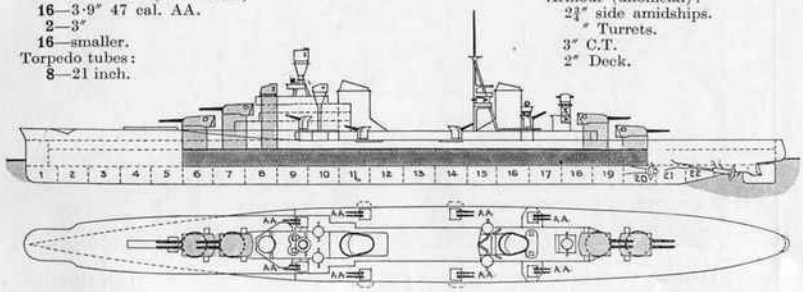
Standard displacement, 10,000 tons. Complement, 723.
Length (*o a.*) 627 feet. Beam 68 feet. Draught 18¾ feet.



Bolzano. 1933 *Photo.*

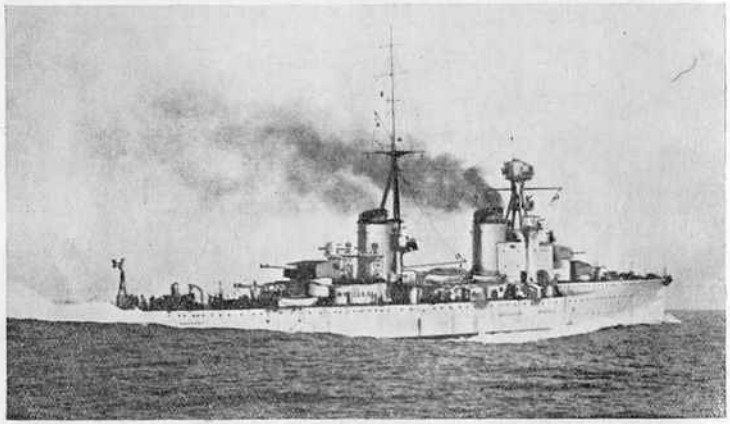
Guns:
8—8″ 53 cal. (new model)
16—3·9″ 47 cal. AA.
2—3″
16—smaller.
Torpedo tubes:
8—21 inch.

Armour (unofficial):
2¾″ side amidships.
″ Turrets.
3″ C.T.
2″ Deck.

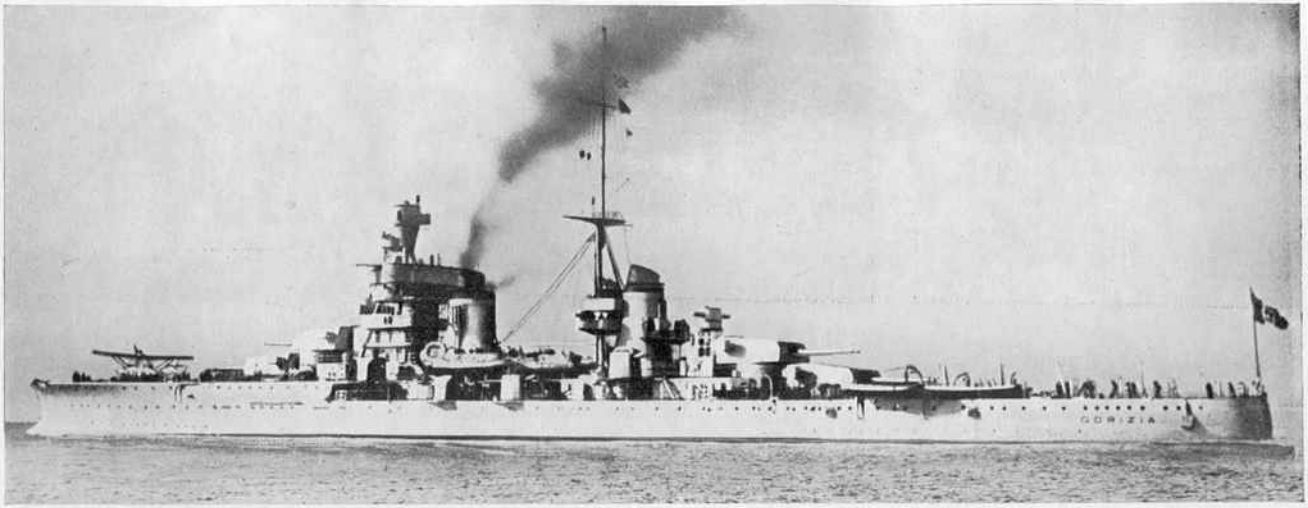


Machinery: Parsons geared turbines, S.H.P. 150,000 = 35·5 kts. 4 screws. 12 Yarrow boilers (300 lbs. pressure). Oil fuel: tons.

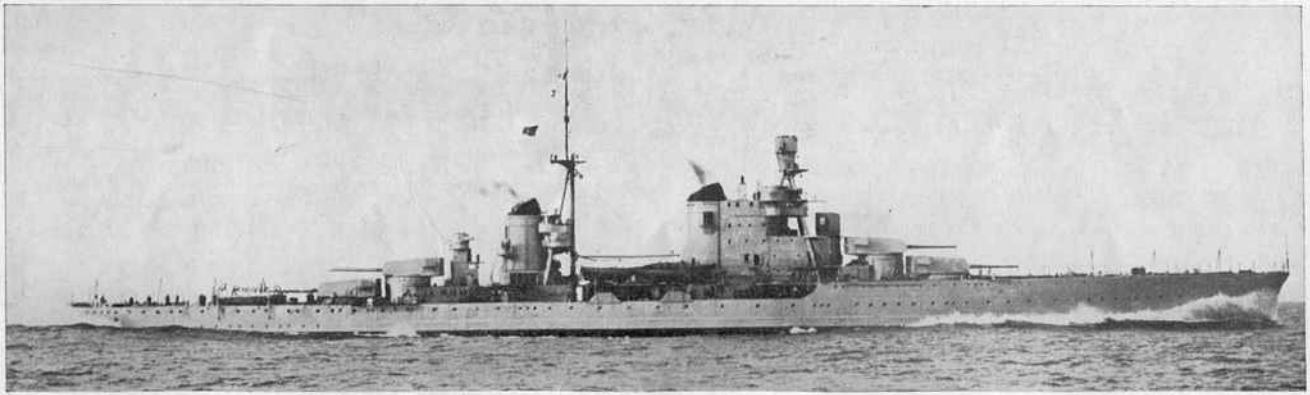
General Notes.—Laid down under 1929 Programme as a third unit of the *Trento* class, but differs from these in dimensions and in having a forecastle deck, besides various alterations in rig, bridgework, etc. She resembles *Trento* in sacrificing a certain amount of protection for an additional 3·5 kts. compared with *Zara*—a modern rendering of the "battle cruiser" role applied to cruisers. Speed on 8 hrs. trial—38 kts. *Max.* 39 kts. The bridge structure has been "stream-lined" to flush the funnel in order to minimise back draught at full speed which drove the funnel fumes into the bridge.



1933 *Photo.*



GORIZIA. 1933 *Photo, Pucci.*



POLA. 1933 *Photo, Official.*

(Note the way the bridge structure is built in to flush the funnel and obviate back draught at speed which collected fumes around the bridge.)

1928 CRUISERS. (*Incrociatori.*) 1931

(Zara Class.—4 Ships.)

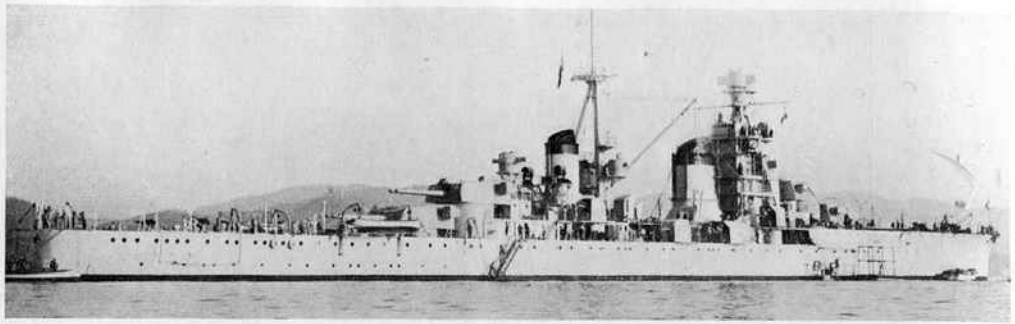
ZARA, FIUME (Both Apl. 27th, 1930), **GORIZIA** (Dec. 28, 1930), **POLA** (Dec. 1931).

Standard displacement, 10,000 tons. Complement,

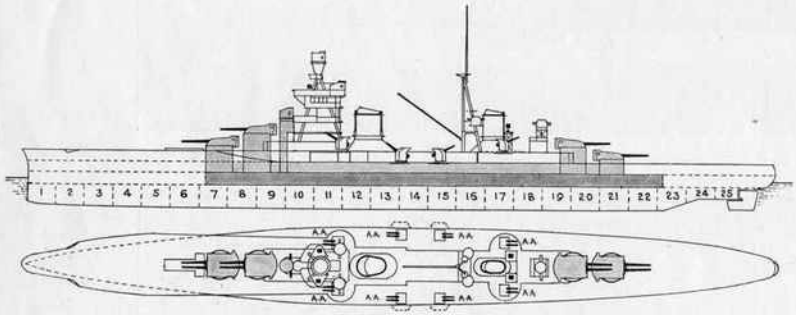
Length (*p.p.*), 599½ feet. Beam, 67⅜ feet. Draught, 19½ feet.

Guns :
8—8 inch, 53 cal.
16—3.9 inch, 47 cal. AA.
16 Smaller.
Torpedo tubes :
Nil.

Armour :
5½″ Belt .....
5″ Turrets .....
4½″ Transverse Bulkheads ..
″ C.T. .....
″ Deck .....



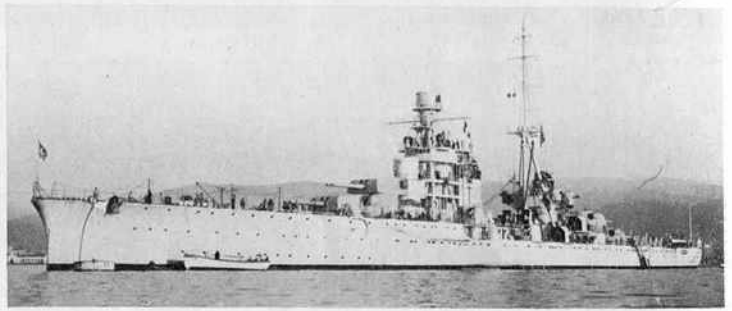
Zara. 1932 *Photo.*



Machinery : Parsons geared turbines. S.H.P. 95,000 = 32 kts. 2 screws. Oil fuel : 1450 tons *normal*, 2200 tons *maximum*. Radius : 3200 miles at 25 kts. 8 boilers.

General Notes.—Zara, Fiume laid down under 1928 Programme, *Gorizia* under that for 1929, *Pola*, 1930.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials 8 hours.*
Zara	Odero-Terni	Odero-Terni	1928	1931	34·2
Fiume	Stab. Tecnico	Stab. Tecnico	1928	1931	33·1
Pola	Orlando	Orlando	1930	1933	33·9
Gorizia	Orlando	Orlando	1929	1932	33·8



Zara. 1932 *Photo.*

Zara. 1931 *Photo, Official.*

Italy Trento Class

TRENTO CLASS.—2 SHIPS.

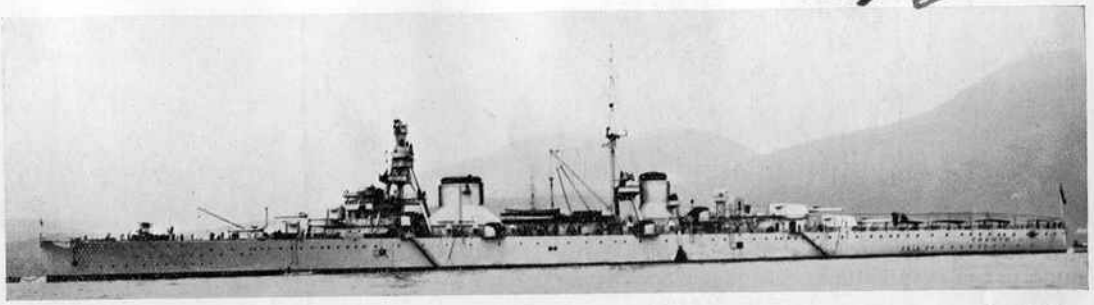
TRENTO (Orlando, Leghorn, Oct. 4th, 1927).

TRIESTE (Stab. Tecnico, Trieste. Oct. 24th, 1926).

Standard displacement, 10,000 tons. Complement, 723.

Length (*p.p.*), 624, (*o.a.*), 642 feet. Beam, 67½ feet

Mean draught, 19 feet.



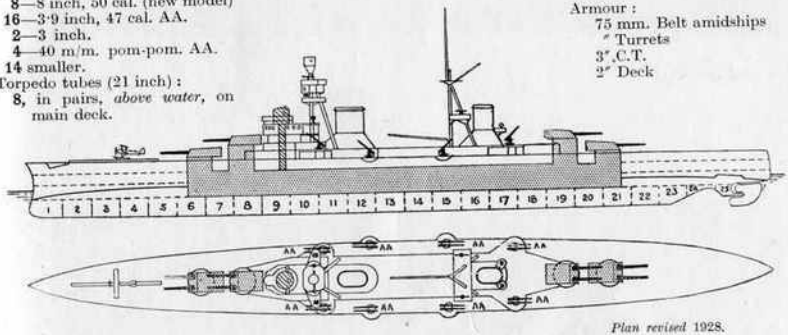
TRENTO.

1933 *Photo, Official.*

To differentiate, note that in *Trieste* the lower fore top encloses all the mast legs.

Guns :
8—8 inch, 50 cal. (new model)
16—3·9 inch, 47 cal. AA.
2—3 inch.
4—40 m/m. pom-pom. AA.
14 smaller.
Torpedo tubes (21 inch) :
8, in pairs, *above water*, on main deck.

Armour :
75 mm. Belt amidships
" Turrets
3" C.T.
2" Deck



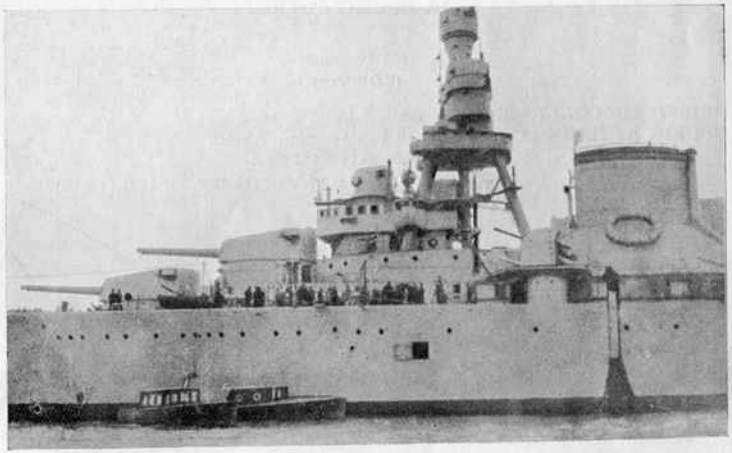
Plan revised 1928.

Machinery : Parsons geared turbines. S.H.P. 150,000 = 35.5 kts. 12 Yarrow boilers (300 lbs. pressure). Oil fuel : 3000 tons.

General Notes.—Laid down under 1923-24 Programme. *Trento*, 8/2/25; *Trieste* in March, 1925. Carry three scouting seaplanes, equipped for bombing. Design modified during construction. They were originally to have had hangar amidships, but this idea has been abandoned and a catapult installed on forecastle. In the revised design, after C.T. is dispensed with, AA. armament redistributed, and additional mast control tops added. These ships are believed to be much more lightly constructed than British *Kent* class, in order to attain a high speed. Completion dates: *Trento*, Sept., 1928; *Trieste*, Dec., 1928.

Gunnery Notes.—8 inch reported to be remarkably powerful weapons with exceptional range. *Maximum* elevation is 45°.

Engineering Notes.—Trials in August, 1928, are said to have given an *average* speed of 35 kts. with 149,000 H.P. and consumption of 68 tons of oil per hour. *Maximum* figure, *Trento*, 38·7 kts. Displacement was 11,000 tons (*normal*) at the time.



TRIESTE.

1932 *Lt. H. E. T. Christis, R.N.*

1932-1931-1930 CRUISERS.

(Condottieri Class.—" E " Type.)

GARIBALDI (Cant. Odero-Terni-Orlando, Muggiano).

DUCA DEGLI ABRUZZI (Cant. Riuniti Dell'Adriatico, Trieste).

Displacement : 7,000 tons.

1932 Programme.
(" D " Type.)

EUGENIO DI SAVOIA (Cant. Ansaldo Sestir P.).

EMANUELE FILIBERTO DUCA D'AOSTA (Odero-Terni-Orlando, Livorno).

Displacement : 6,791 tons.

1931 Programme.
(" C " Type.)

MONTECUCCOLI (Cant. Ansaldo Sestir P.).

MUZIO ATTENDOLO (Cant. Riuniti Dell'Adriatico, Trieste).

Displacement : 5,855 tons.

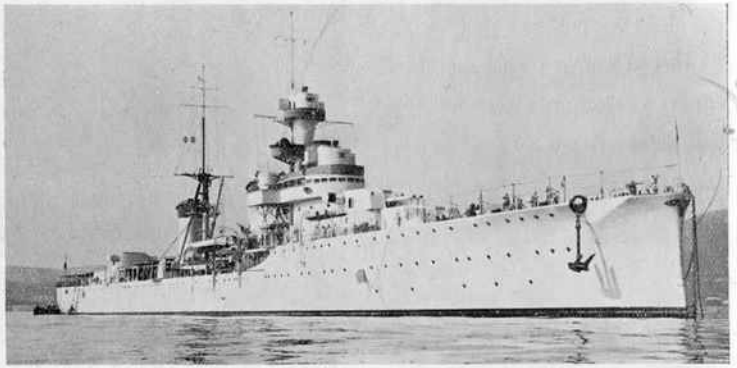
Dimensions : 607·2 (179·5 m.) × 53·7 (16·42 m.) × 14 ft. (4·3 m.).

Guns : **8**—6″
6—3·9″
6—37 mm. AA.
3 M.G.

Tubes :

Turbines : H.P. 110,000 = 37 kts. 2 screws. 6 boilers.

1930 Programme.



Armando Diaz. 1933 *Photo.*

Bande Nere (*p* 268). 1933 *Photo, Pucci.*

("Condottieri" Class—"B" Type, 2 Ships.)

LUIGI CADORNA (Trieste, Sept. 30, '31).
ARMANDO DIAZ (Odero, July, '32).

Displacement: 5,080 tons.

Dimensions: 555 × 51 × 14 feet.

Guns:
- **8**—6 inch
- **6**—3·9 inch AA.
- **6**—37 m/m. AA.
- **11**—M.G.

Tubes: **4**—21 inch.

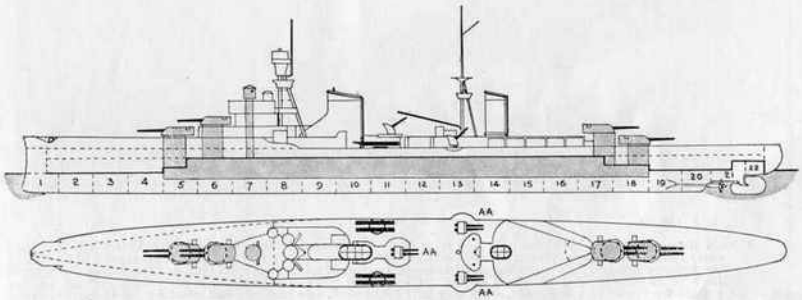
Armour: Thin plating only on Belt, Turrets, and Decks.

Machinery:
- 2 Geared Parsons Turbines.
- H.P. 90,000 = 37 kts. On trials at 5500 tons displacement *Diaz* made a mean speed of 39·8 kts.

Oil: 500/1,000 tons.

Radius: 2,500 miles at 25 kts.

Armando Diaz. 1933 *Photo, N. Hutchins, Esq.*



General Note.—Are modified *Bande Nere* type with reduced upper works, different arrangement of rig and funnels, and altered positions of AA. guns. The platform between the funnel and after turret is intended for stowage of aircraft.

Armando Diaz 1933 *Photo, Official.*

1930 CRUISERS.

("Condottieri" Class—"A" Type, 4 Ships.)

GIOVANNI DELLE BANDE NERE (April 27, '30)
BARTOLOMEO COLLEONI (December 21, '30)
ALBERTO DI GIUSSANO (April 27, '30)
ALBERICO DI BARBIANO (August 23, '30)

Displacement: 5069 tons.

Dimensions: 555 × 51 × 14 feet.

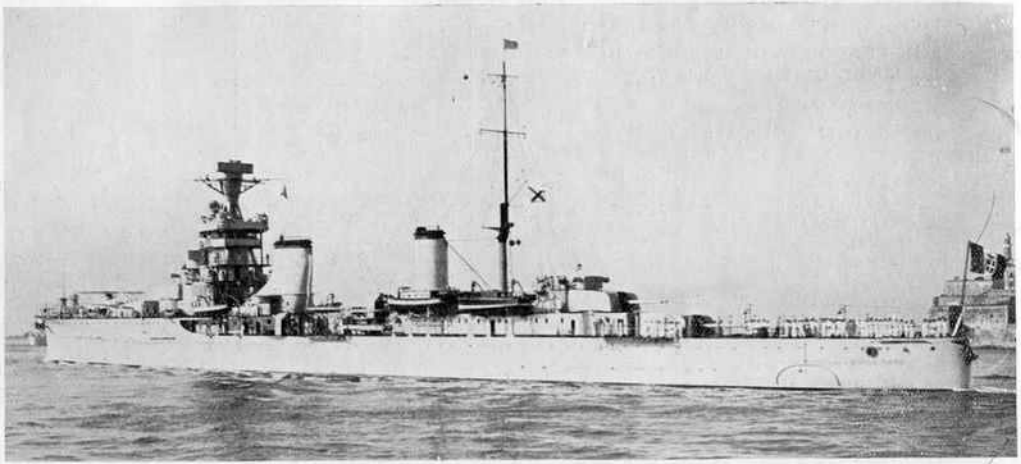
Guns:
8—6 inch. 53 cals.
6—3·9 AA.
6—37 m/m. AA.
11 smaller.

Torpedo tubes (21 inch):
4 *above water* (paired).

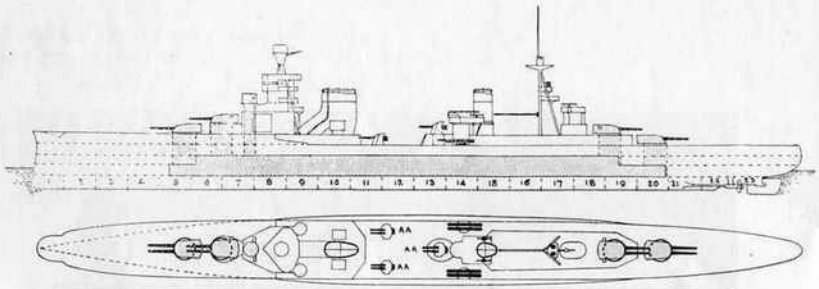
Armour:
Belt. Deck. Turrets. Thin plating only.

Machinery: 2 Geared Belluzzo turbines.
H.P. 90,000 = 37 kts. 6 Boilers. Oil: 500/1000 tons.

Radius = 2,500 miles at 25 kts.



Giovanni delle Bande Nere. 1933 *Photo, L.U.C.E.*

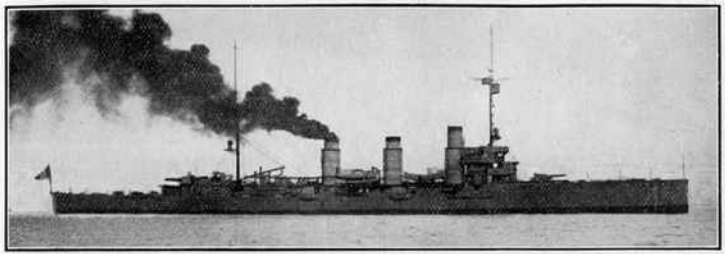


Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials* 8 hrs.
Bande Nere	Castellamare D.Y.	Trieste	1928	1931	39.0 kts.
Colleoni	Ansaldo	Ansaldo	1928	1931	40.9 ,,
Barbiano	Ansaldo	Ansaldo	1928	1931	39.74 ,,
Giussano	Ansaldo	Ansaldo	1928	1931	38.95 ,,

B. Colleoni.

General Notes.—This class have been built as a reply to the French destroyers of the *Lion* type, over which they have every advantage. They represent an extraordinary efficient and novel type of cruiser which is capable of overtaking the fastest destroyer. On trials the *A. di Barbiano* reached 42·04 knots at 5,607 tons, and maintained 39·74 knots for 8 hours with her full armament aboard. (Dec., 1930). Their appearance is particularly striking, as they present the profile of a battleship, with their lofty bridgework, squat funnels, and general sense of aggressiveness. The original design has been somewhat modified as regards the AA. gun arrangement, superstructures and rig. The present fire control top is 95 feet over water. A catapult of the Magaldi type is fitted along the forecastle. The policy of placing an order for three ships at once with one firm has resulted in all sorts of constructural economies, and the Ansaldo ships were all launched with their masts and funnels up and proceeded on trials very soon after taking the water.

1 ex-German Cruiser.



1925 *Photo, by courtesy of the Ministry of Marine.*

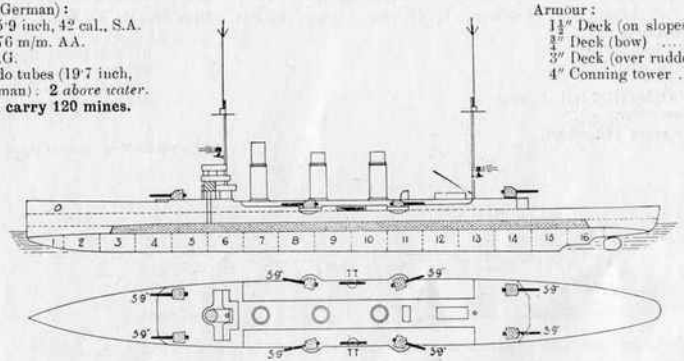
BARI (ex-German *Pillau*, ex-Russian *Muraviev Amurski*, April, 1914).

Standard displacement, 3248 tons. *Normal* displacement, 4600 tons. Complement, 398.

Length (*p.p.*), 403 feet. Beam, 46 feet. { *Mean* draught, 16 feet. / *Max.* „ 19 feet. } Length (*o.a.*), 441 feet.

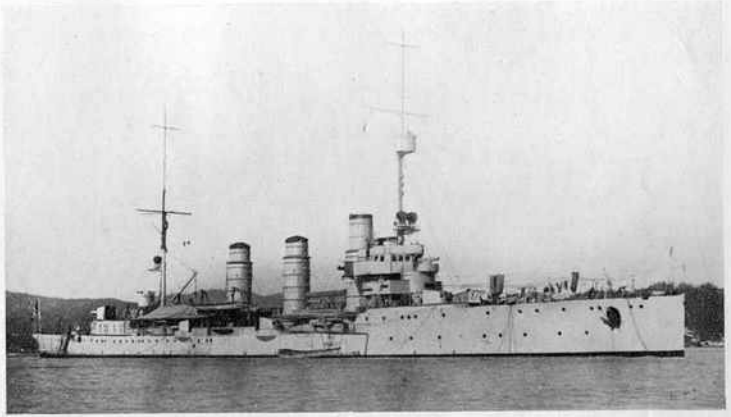
Guns (German):
8—5·9 inch, 42 cal., S.A.
1—76 m/m. AA.
3 M.G.
Torpedo tubes (19·7 inch, German): 2 *above water*.
Can carry 120 mines.

Armour:
1½" Deck (on slopes).....
¾" Deck (bow) .....
3" Deck (over rudder) .
4" Conning tower .....

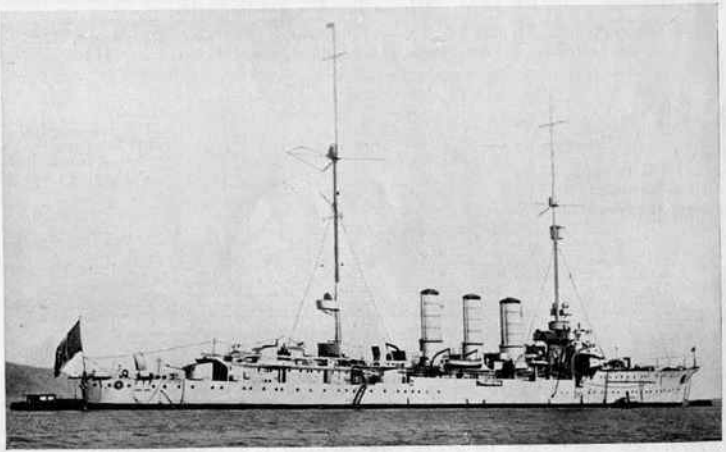


Machinery: Schichau (Melms & Pfenninger) turbines. 3 screws. Designed H.P. 27,400 = 27¼ kts.
Boilers: Schichau. Coal: *normal* 500 tons and 750 tons oil fuel = 4500 miles at 10 kts.

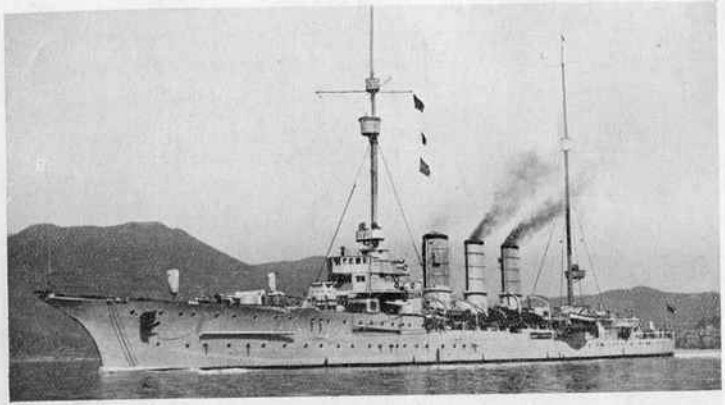
General Notes.—Built by Schichau, Danzig, April, 1913—December, 1915. A sister ship, *Elbing*, sunk in the Battle of Jutland. Both vessels were seized by Germany on outbreak of war with Russia, for whom they were originally laid down. *Bari* taken over by Italy, 1920.



BARI. 1930 *Photo, Capt. Mateo Mille.*



ANCONA. 1930 *Photo, Capt. Mateo Mille.*



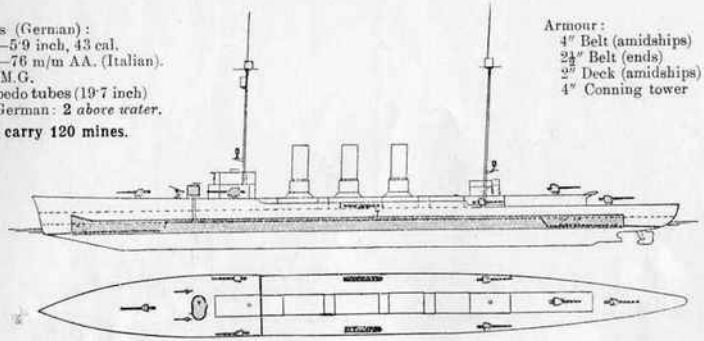
ANCONA. (Forecastle extended to accommodate catapult.) 1931 *Photo.*

ANCONA (ex-German *Graudenz*, October, 1913).

Standard displacement, 3838 tons. *Normal* displacement, 5300 tons. Complement, 427.
Length (*waterline*), 456 feet. Beam, 45 feet. *Mean* draught, 16 feet. (*Max.* 17 feet).

Guns (German):
7—5·9 inch, 43 cal.
1—76 m/m AA. (Italian).
3 M.G.
Torpedo tubes (19·7 inch)
German: **2** *above water.*
Can carry 120 mines.

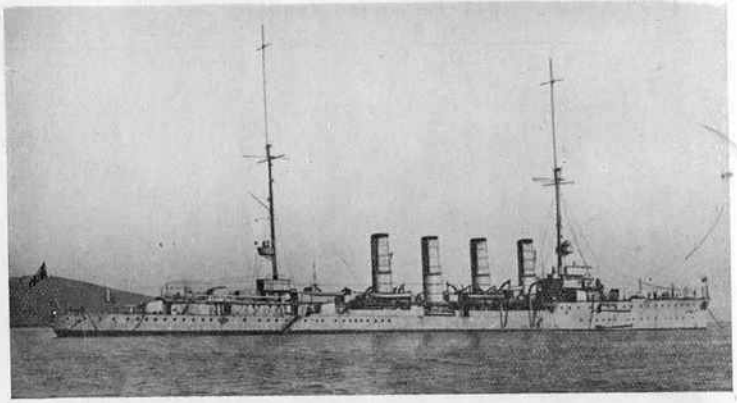
Armour:
4″ Belt (amidships)
2½″ Belt (ends)
2″ Deck (amidships)
4″ Conning tower



Machinery: "Marine Type" Turbine. 2 screws. Boilers: 12 Schulz-Thornycroft. Designed H.P. 26,000 = 27·25 kts. Coal: *normal* 470 tons; *maximum* 1300 tons. Oil: 220 tons.

Armour Notes.—Belt is rather deeper than in *Taranto.*

General Notes.—Belongs to German 1912 Programme. Built by Kiel D.Y. Laid down 1912 and completed 1914. Radius of action: *about* 5,500 to 6,000 miles at cruising speed. Taken over by Italy, 1920, and gun positions modified.



1930 *Photo, Capt. Mateo Mille.*

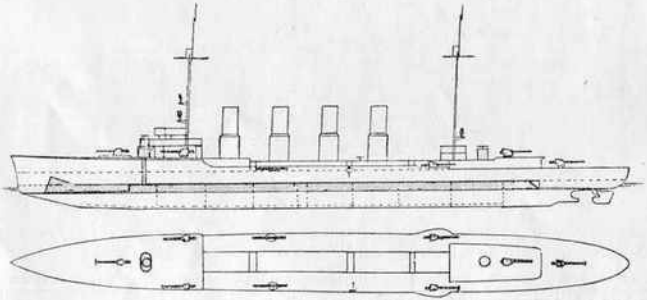
TARANTO (ex-German *Strassburg*, Aug., 1911).

Standard displacement, 3184 tons. *Normal* displacement, 4550 tons; 5100 tons *full load.* Complement, 445.
Length (*p.p.*) 440·3 feet (*w.l.*) 446½ feet. Beam, 43·6 feet. *Mean* draught, 16¾ feet.

Guns (German):
7—5·9 inch, 43 cal.
1—76 mm. anti-aircraft.
3 M.G.
Torpedo tubes (19·7 inch, German):
2 *above water.*
Can carry 120 mines.

Armour:
3½″ Belt (amidships).....
2¾″ Belt (ends).....
2″ Deck (amidships).....
4″ Conning tower .....

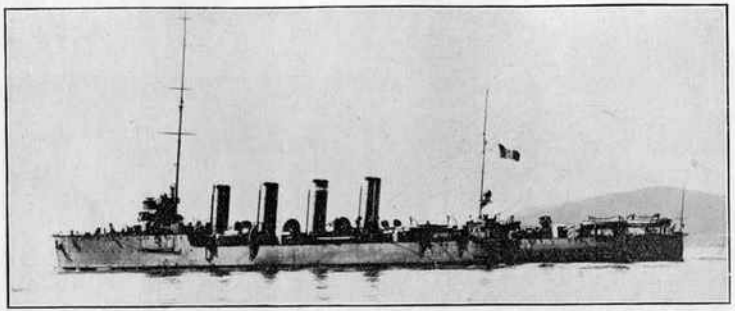
Note to plan.—Now rigged as photo



Machinery: Parsons turbine. 2 screws. Boilers: 16 Schulz-Thornycroft. Designed H.P. 26,000 = 27 kts. (on trials, 25,650 = 26·9). Coal: *normal*, 880 tons; *maximum*, 1330 tons. Oil: 130 tons.

Notes.—Laid down for German Navy at Wilhelmshaven, April, 1910; completed December, 1912. Taken over by Italy, 1920. Sister ship, *Mulhouse* (ex-*Straisund*), now in French Navy, to which refer for any further notes. 4 boilers are oil burning. Maximum speed now 24 kts.

1911-12 EX-ENEMY CRUISERS.



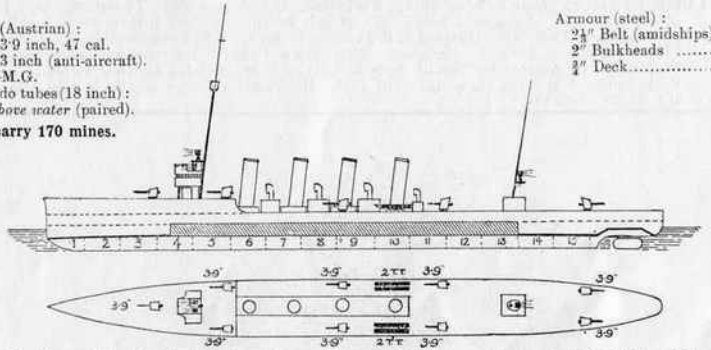
VENEZIA. 1927 *Official Photo.*

MODIFIED "ADMIRAL SPAUN" TYPE—2 SHIPS.

BRINDISI (ex-Austrian *Helgoland*, Nov., 1912). **VENEZIA** (ex-Austrian *Saida*, Oct., 1912).
Standard displacement, 2756 tons. *Normal* displacement, 3500 metric tons. Complement, 350.
Length (*w.l.*), 410¾ feet. Beam, 42 feet. *Mean* draught, 15 feet. Length *over all*, 428½ feet.

Guns (Austrian):
9—3·9 inch, 47 cal.
1—3 inch (anti-aircraft).
3—M.G.
Torpedo tubes (18 inch):
4 *above water* (paired).
Can carry 170 mines.

Armour (steel):
2¼" Belt (amidships)
2" Bulkheads .....
¾" Deck .....

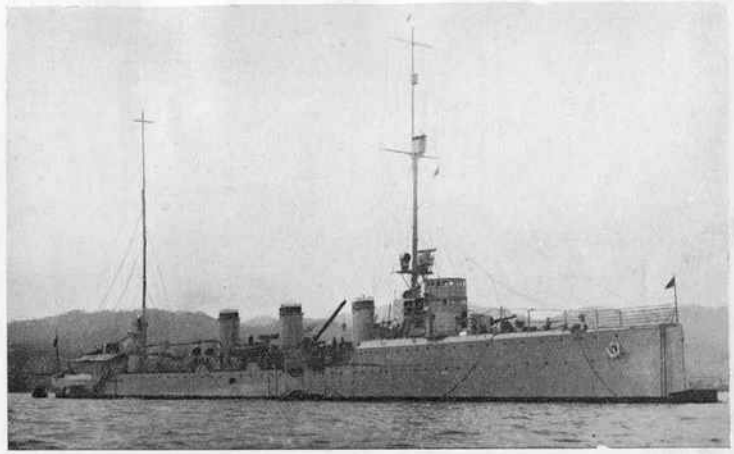


Machinery: Turbine (*See Notes*). 2 screws. Boilers: 16 Yarrow. Designed H.P. 25,600 = 27 kts.
Coal: *normal*, 450 tons; *maximum*, 750 tons. Radius of action: 860 miles at 27 kts., 1,600 miles at 24 kts.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Turbines*	*Boilers*	*Best recent speed*
Venezia	Monfalcone	Prager Masch.	Sep.'11	May.'14	24,500=27	Melms & Pfenninger A.E.G.	Yarrow	
Brindisi	Fiume	Ganz-Danubius	Oct.'11	Oct.'14	25,600=27		Yarrow	

General Notes.—Ex-Austrian ships, assigned to Italy, 1920.

1909 SCOUT CRUISER (Mine Layer).

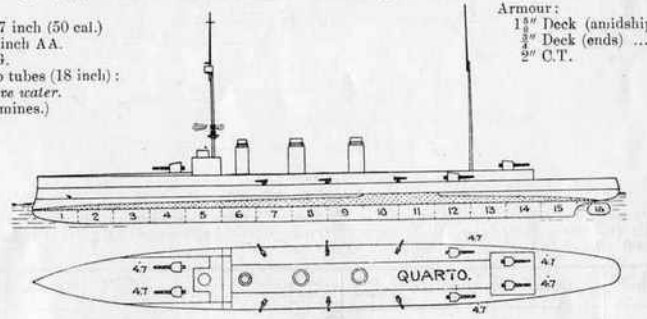


QUARTO. 1930 *Photo, Capt. Mateo Mille.*

QUARTO (Aug., 1911)
Standard displacement, 2903 tons. *Normal* displacement, 3442 tons. Complement, 322.
Length (*p.p.*), 413·4 feet. Beam, 42·1 feet. *Mean* draught, 13 feet. Length *over all*, 431¾ feet.

Guns:
6—4·7 inch (50 cal.)
6—3 inch AA.
5 M.G.
Torpedo tubes (18 inch):
2 *above water*.
(200 mines.)

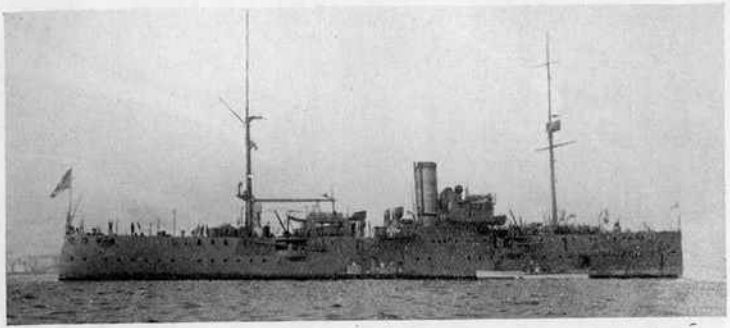
Armour:
1½" Deck (amidships)
¾" Deck (ends) .....
2" C.T.



Machinery: Parsons turbine. 4 screws. Boilers: 10 Blechynden (8 oil-burning, 2 mixed firing)
Designed S.H.P. 25,000 = 28 kts. Fuel capacity: *maximum*, 50 tons coal + 490 tons oil = 2600 miles at 15 kts., or 1220 miles at 25·7 kts. **Laid down Venice D.Y Oct., 1909. Completed Sept., 1912.**

General Notes.—Carries 200 blockade mines. Designed by Engineer-Col. Truccone. Boilers renewed at Fiume, 1924.

1913 COLONIAL CRUISER (*Cannoniera*).



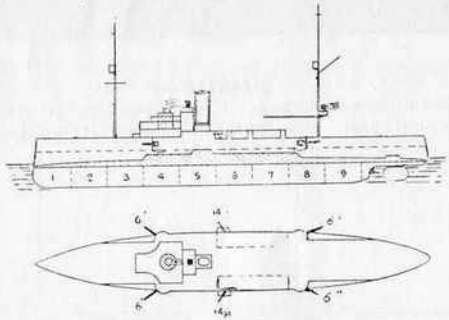
1931 *Photo.*

CAMPANIA (July, 1914).

Displacement, 2070 tons (sheathed and coppered). Complement, 240.
Length (*p.p.*) 219·4 feet. Beam, 41⅔ feet. *Max.* draught, 16¾ feet. Length *over all*, 272·3 feet.

Guns:
4—6 inch, 40 cal.
2 14 pdr.
2—76 mm. AA.
2 M.G.

Armour:
1″ Deck ...
2″ Conning tower .....



Ahead: 2—6 in.

Astern: 2—6 in.

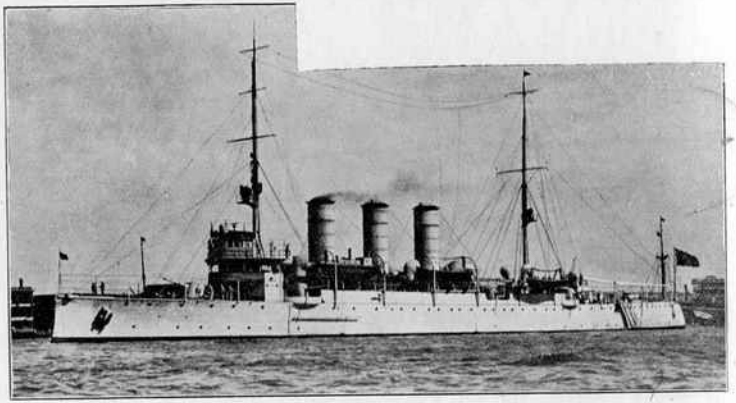
Broadside: 2—6 in.

Machinery: 2 sets vertical triple expansion. 2 screws. 4 cylindrical boilers. Designed H.P. 5000 = 16·5 kts. (*not attained on trials*) Coal: *normal* 300 tons, *full load* 470 tons = 4300 miles at 10 kts. and about 2000 miles at 15 kts.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
Campania	Castellamare D.Y.	Off. Mec., Naples	Sept. '13	Aug. '16	About 5000 H.P. = 15·7 kts.	Cyl.	

General Notes.—Built for Colonial Service. Sister ship *Basilicata* sunk by boiler explosion, Port Tewfik, Suez Canal, 1919. Re-floated 1920, but not considered worth repair. Fore and aft centre-line 6in. guns removed, reducing armament by two guns.

1907 COLONIAL CRUISER (*Cannoniera*).



1929 *Official Photo.*

LIBIA (ex-Turkish *Drama*, Nov., 1912). 3701 tons. Complement, 331. Dimensions: 340 (*o.a.*) × 47½ × 16 feet. Armament: **8**—4·7 inch, 50 cal., **3**—76 m.m. AA., **2** M.G., **2**—18 inch tubes (*above water*). Deck, 4″. Designed H.P. 12,500 = 22 kts. 16 Niclausse boilers. Coal: *normal* 275 tons, *maximum* 675 tons. Endurance: 4500 miles at 10 kts. Built and engined by Ansaldo. Was begun by Ansaldo for Turkish Navy in 1911 and appropriated by Italy on outbreak of Turko-Italian War. Not completed until 1913. Rearmed for foreign service in 1924. Trials: H.P. 11,500 = 22·9 kts.

RECOGNITION OF TORPEDO CRAFT.

Esploratori: High speed vessels of 3,000—1,300 tons.
Cacciatorpediniere: Destroyers of less than 1,300 and more than 700 tons.
Torpediniere: Torpedo Boats less than 700 and more than 200 tons.
Torpediniere Costiere: Under 200 tons.

124* + 8† Torpedo Craft.

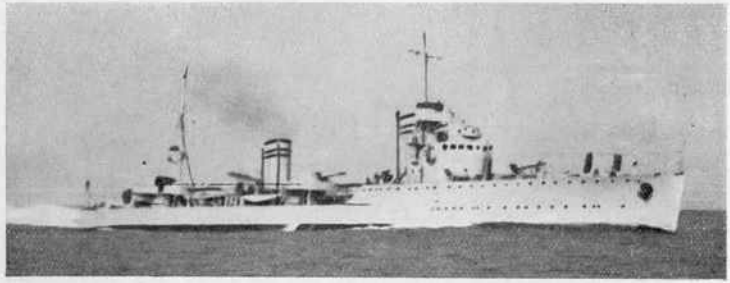
Summary.		†*Building.*	**Completed.*	*Projected.*
SCOUTS (Esploratori)	...	—	20	—
DESTROYERS (Cacciatorpediniere)	...	4	36	—
TORPEDO BOATS (Torpediniere)	...	4	36	—
COASTAL Boats	...	—	32	—

The following list of distinctive letters, painted on bows of destroyers, and torpedo boats, has been furnished officially to "Fighting Ships" by the courtesy of the Ministry of Marine 1933.

A B	Abba
A C	Acerbi
A D	Audace
A L	Aquilone
A M	Ardimentoso
A R	Ardente
B S	Bassini
B T	Battisti
B R	Borea
B O	Baleno
C A	Carini
C D	Castelfidardo
C E	Cantore
C F	Confienza
C I	Cascino
C L	Cairoli
C M	Calatafimi
C H	Chinotto
C S	Cosenz
C T	Curtatone
C Z	Cortellazzo
C P	Crispi
D Z	Dezza
D R	Dardo
E R	Euro
E S	Espero
F R	Freccia
F B	Fabrizi
F C	Fuciliere
F G	Folgore
F N	Fulmine
G D	Grado
I P	Impavido
I D	Indomito
I R	Irrequieto
I S	Insidioso
L F	La Farina
L M	La Masa
L P	Lampo
M B	Monzambano
M D	Medici
M F	Monfalcone
M N	Montanari
M S	Missori
M T	Mosto
M A	Manin
N V	Nievo
N C	Nicotera
N B	Nembo
N L	Nullo
O R	Orsini
O T	Ostro
P E	Pepe
P L	Pilo
P O	Poerio
P A	Papa
P R	Prestinari
P T	Palestro
R C	Ricasoli
R S	Rossarol
S F	Schiaffino
S L	Solferino
S M	San Martino
S R	Sirtori
S O	Stocco
S E	Sella
S U	Sauro
S A	Strale
S T	Saetta
T B	Turbine
Z F	Zeffiro
Z F	Zenson

SCOUTS. (*Esploratori.*)

12 "Navigatori" class (ordered 1926.)

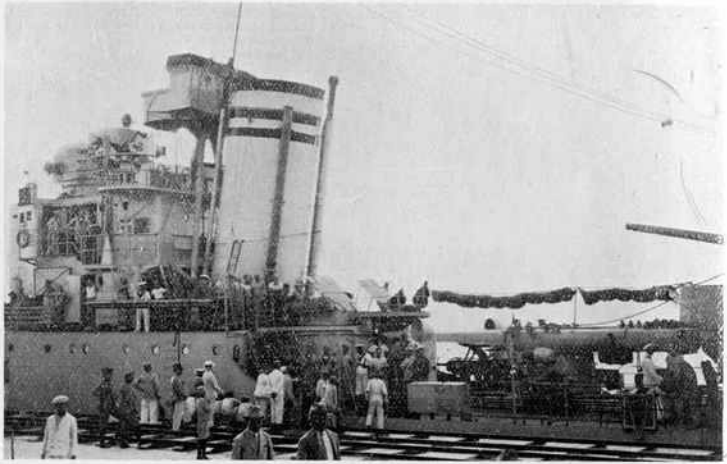


DA MOSTO. 1931 *Official Photo.*

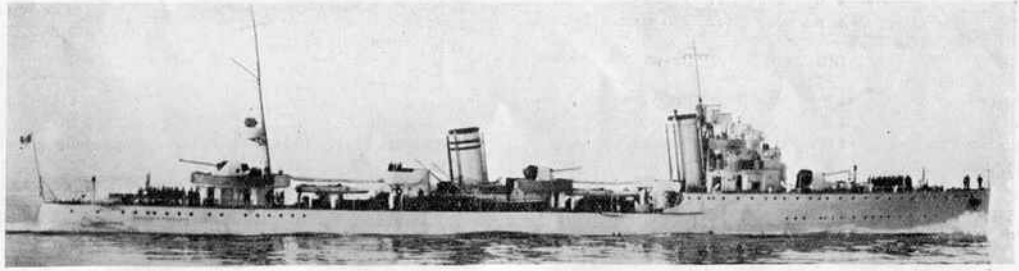
2 *Ansaldo* boats: ***Luca Tarigo*** (Dec. 9th, 1928), ***Lanzerotto Malocello*** (March 14th, 1929).
2 *Odero* boats: ***Ugolino Vivaldi*** (Jan. 9th, 1929), ***Antoniotto Usodimare*** (May 12th, 1929).
2 *Tirreno* (Riva Trigoso) boats: ***Leone Pancaldo*** (Feb. 6th, 1929), ***Antonio da Noli*** (May 21st, 1929).
2 *Riuniti* (Ancona) boats: ***Emanuele Pessagno*** (August 12th, 1930), ***Nicoloso Da Recco.***
4 *Quarnaro* boats: ***Nicolo Zeno*** (Aug. 11, 1928), ***Giovanni Da Verazzano*** (Dec. 15th 1928), ***Alvise Ia Da Mosto.*** (July 1st, 1929), ***Antonio Pigafetta.***

Displacement: 1628 tons, *standard*; 2010 tons *deep load*. Dimensions: 352 (*o.a.*) 351 (*p.p.*) × 33½ × 16¾ feet. I.H.P. 53,500 = 38 kts. Guns: **6**—4.7 inch, **4**—37 m/m. AA. **10** M.G. Tubes: **6**—21 inch, in triple deck mountings. Some carry 50 mines.

Note.—The *Da Mosto* has attained the speed of 44-45 kts. with 71,000 H.P.—the highest yet recorded for destroyers.



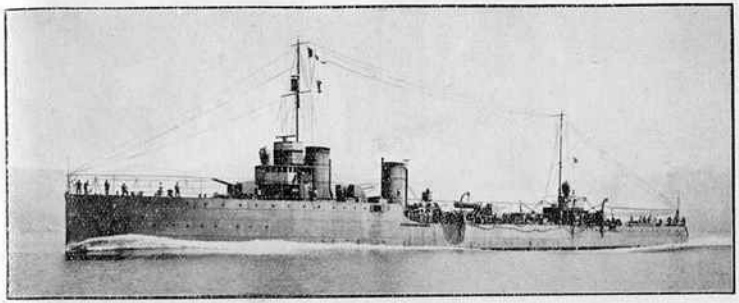
L. MALOCELLO. (Showing alterations to bridge.) 1931 *Photo, Capt. Mateo Mille.*



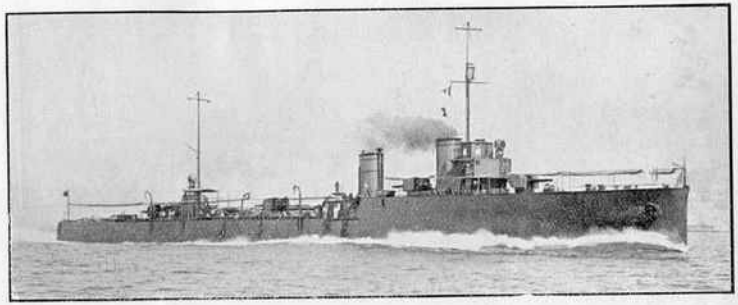
EMANUELE PESSAGNO. 1931 *Photo, Official.*

SCOUTS. (*Esploratori*).

3 Leone Class.



LEONE. (*Pantera* has S.L. on platform, low on foremast.) 1925 *Photo, by favour of Messrs. Ansaldo.*



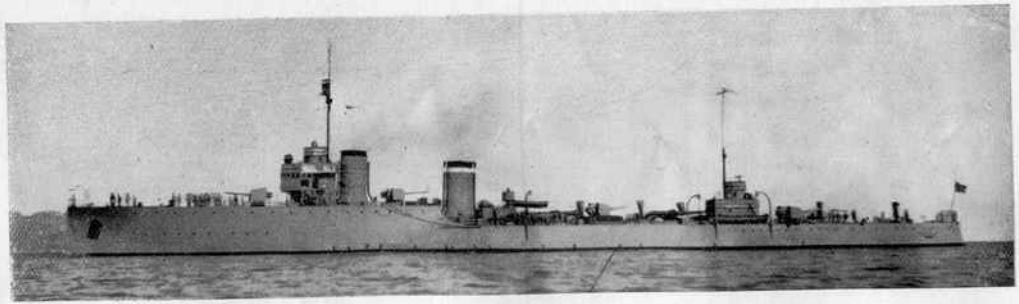
TIGRE. 1925 *Photo, by favour of Messrs. Ansaldo.*

Ansaldo type: **Leone, Pantera, Tigre** (1923). 1526 tons (*standard*), 2283 tons (*full load*). Dimensions: 372 (*o.a.*), 359½ (*p.p.*) × 34 × 11'5 feet (*mean*). Guns: 8—4.7 inch (45 cal.), 1—14-pdr. (40 cal.) AA., 2—2 pdr. AA. Tubes: 4—2 inch. Designed S.H.P. 42,000 = 34 kts. (Trials, 50,000 = 35 kts.). Best recent speeds, 33 kts. or less. 4 Parsons turbines (geared). 4 Yarrow oil-burning boilers. 2 screws. Oil fuel: 200 tons *normal*, 400 tons *max.* Carry 60 mines (*normal* stowage), or 100 (*maximum*).

* *Leopardo* and *Lince* cancelled.

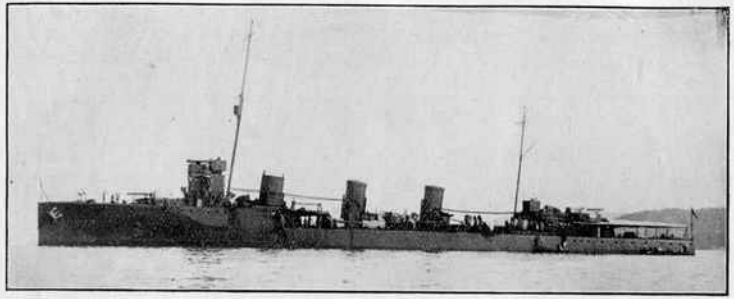
Notes.—Internally these ships are most elaborately fitted. Each is equipped with a different system of fire-control—British, Italian and German respectively. 4.7 inch guns are paired very closely—only 1 foot apart. *Max.* elevation: 30°. Special apparatus for smoke screen production is fitted on starboard quarter of each. The distinctive appearance conferred by the upright funnels, of unequal height, and straight stem is a noteworthy feature of these vessels.

Funnel bands: *Pantera*, none *Leone*, 1 white on fore funnel; *Tigre*, 1 white on after funnel.



TIGRE. *Photo added* 1931, *W. A. Fuller, Esq.*

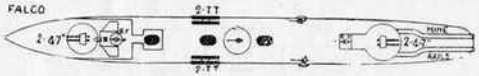
2 Aquila class. Mine Layers, carrying 50 mines each.



AQUILA. 1925 *Photo, Pucci.*

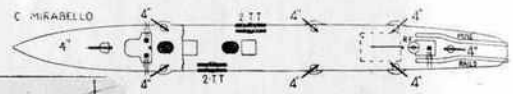
2 *Pattison* type: ***Falco*** (1919), 1286 tons ***Aquila*** (1916), 1407 tons 1733 tons *normal*. Dimensions: 308.5 (*p.p.*) × 30'8 × 10'7 feet (*mean*). Guns: 4—4.7 inch, 45 cal.; 2—3 inch, 40 cal. A.A.; 2 M.G. Tubes: 4—18 inch, in two twin deck mountings. Designed S.H.P. 39,800 = 36·5 kts. 2 Tosi turbines, 5 Thornycroft oil-burning boilers, 2 screws. Endurance: 1700 miles (15 kts.), 380 miles (full speed). Oil: 120 *normal*, 260 tons *max*. Complement, 150.

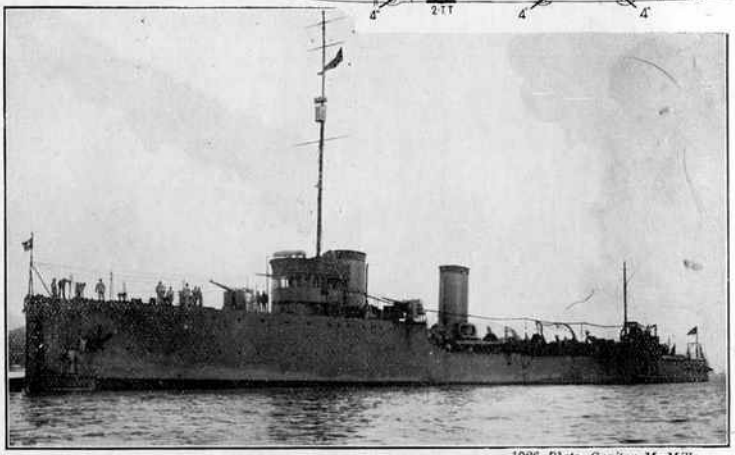
Note.—These two destroyers were to have been built for the Rumanian Navy. Appropriated for Italian Navy on outbreak of war with Austria-Hungary. Two boats, *Nibbio*, *Sparviero*, sold back to Rumania, 1920.



2 Mirabello class.

Mine Layers, each carrying 100 mines.



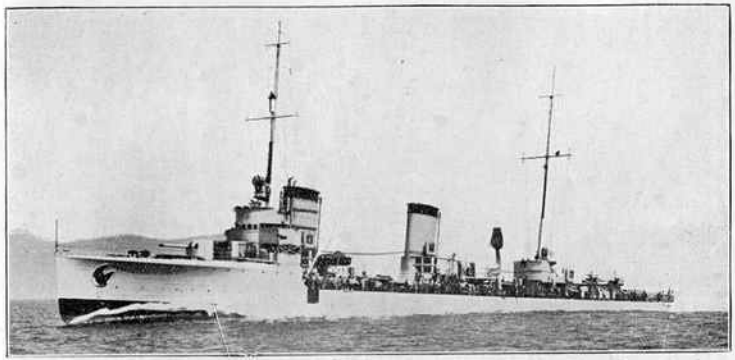


1926 *Photo, Capitan M. Mille.*

2 *Ansaldo* type: ***Carlo Mirabello*** (1914), ***Augusto Riboty*** (1915). 1384 tons. Dimensions: 331.4 (*p.p.*) × 32 × 10.6 feet (*mean*). Guns: 8—4 inch, 2—40 m/m A.A. 2 M.G. Tubes: 4—18 inch in twin deck mountings. Designed S.H.P. 35,000 = 35 kts. Made 33.75 and 35.03 kts. on *trials* respectively. 4 Yarrow oil-burning boilers. 2 Parsons geared turbines. 2 screws. Oil fuel: *normal* 200 tons, *maximum* 350 tons. Endurance: 2840 miles (15 kts.), 500 miles (full speed).

Esploratore.

1 Ex-German Boat ("1916 Design").

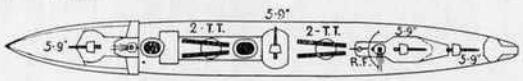


1924 *Official Photo.*

1 *Vulkan* boat: ***Premuda*** (ex-German *V* 116, built 1916-18). Displ.: 1526 tons. Dimensions: 334.6 (*p.p.*) 360 (*o.a.*) × 36¼ × 12.8 feet (*mean*). Guns: 4—5.9 inch (42 cal.) 2—40 m/m. AA. Tubes: 4—19.7 inch, in 2 twin deck mountings. Machinery: A. E. G.-Vulkan turbines. Boilers: 4 "Marinetype" (Schulz-Thornycroft). Trials: H.P. 53,975=33.7 kts. 2 screws. Oil fuel: 280 tons *normal*, 720 tons *max.* Complement, 154. Carries 40 mines.

Notes.—German "1916 Design" boat, taken over by Italy, 1920. For other remarks, refer to *Amiral Sénès* (sister boat), in French Navy Section.

PREMUDA.



Cacciatorpediniere.

4 Maestrale class (ordered 1931).

2 *Ancona* MAESTRALE ( ), GRECALE ( )
2 *Riva Trigosa* LIBECCIO ( ), SCIROCCO ( ).

Displacement: 1,449 tons. Dimensions: 341 × 33 × ? feet. I.H.P. 50,000 = 38 kts.

Armament: 4—4·7 in. 50 cal. 6—21 inch T. tubes.
2—37 AA.
2—M.G.

DESTROYERS.

Cacciatorpediniere.

4 Folgore Class (ordered 1929).

1932 *Photo, Official.*

2 *Cant. Partenopei Napoli* boats: ***FOLGORE*** (Apl. 26th, 1931), ***LAMPO*** (July 26th, 1931).

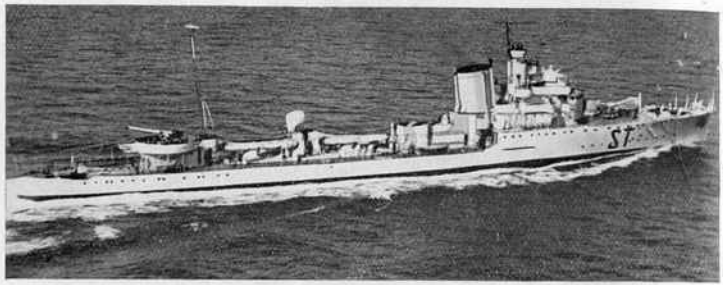
2 *Cant. Nav. Quarnaro* boats: ***BALENO*** (Mar. 22nd, 1931), ***FULMINE*** (Aug. 2nd, 1931).

Displacement: 1,220 (*standard*). Dimensions: 309½ × 30½ × 11 feet.

Both classes: Machinery 2 sets Parsons geared turbines, 3 Yarrow oil fired boilers. I.H.P. 44,000/46,000 = 38 kts. Guns: 4—4·7″, 4—37 m/m AA., 8 M.G. Tubes: 6—21″ in triple mountings. Oil: 225 tons. Complement, 150.

Dardo class.—As first designed these boats had two funnels and a straight bow, resembling "Turbine" in profile. During construction the design was changed, the uptakes being trunked into one stack, and the bridge and upperworks modified, while the bows were given an overhang. After launching further modifications were made, the tripod foremast was abolished, control platforms and a searchlight tower were added to the bridgework and the funnel raised.

4 Dardo Class (ordered 1928).

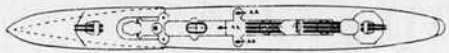


STRALE. 1932 *Photo, Official*

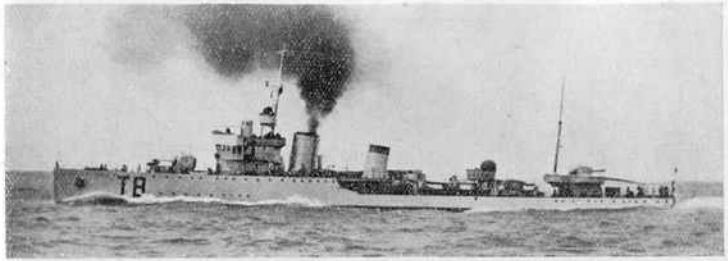
2 *Odero* boats: ***DARDO*** (Sept. 6th, 1930), ***STRALE*** (Mar. 26th, 1931).

2 *Tirreno* boats: ***FRECCIA*** (Aug. 3rd, 1930), ***SAETTA*** (Jan. 17, '32).

Displacement 1,225 tons *standard*, 1,450 tons *normal*. Dimensions: 302½ × 30½ × 11 feet.



FOLGORE. 1933 *Photo Official.*



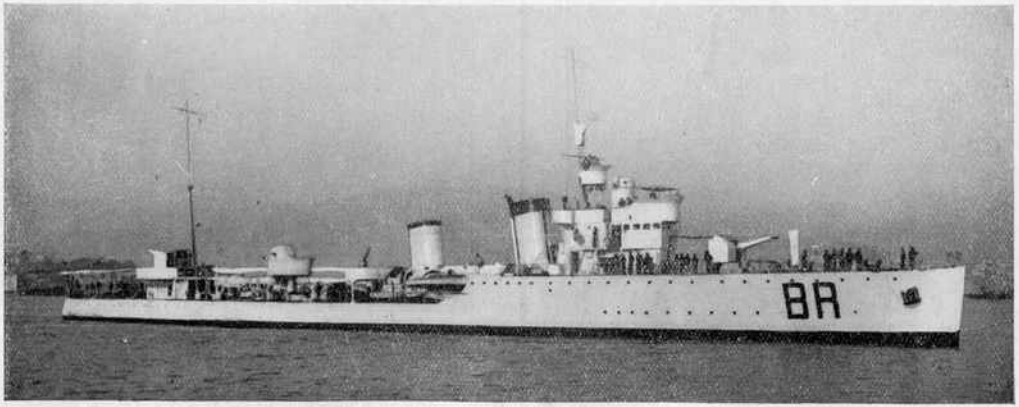
TURBINE. 1931 *Photo.*

4 *Ansaldo* boats: ***Borea*** (Jan, 1927), ***Espero*** (Aug. 31st,1927), ***Ostro*** (Jan. 2nd, 1928), ***Zeffiro*** (27th May, 1927). 2 *Odero* boats: ***Aquilone*** (Aug. 3rd, 1927), ***Turbine*** (21st April, 1927). 2 boats by Cant. del Tirreno, Riva Trigoso: ***Euro*** (July 7th, 1927), ***Nembo*** (27th Jan., 1927).

All ordered or laid down 1924-25. Displacement: 1090/1100 tons *standard*, 1355 tons *full load*. Dimensions: 299½ (*p.p.*), 307½ (*o.a*) × 30½ × 10¾ feet. Geared turbines. 3 Thornycroft boilers, with superheaters. S.H.P. 35,000=36 kts, *Turbine*, 4 hours = 38.9. Best mile run = 39.6. Guns: **4**—4.7 inch, **3**—40 m/m. AA., **4** M.G. Tubes: **6**—21 inch, in triple deck mountings. Oil: 240 tons.

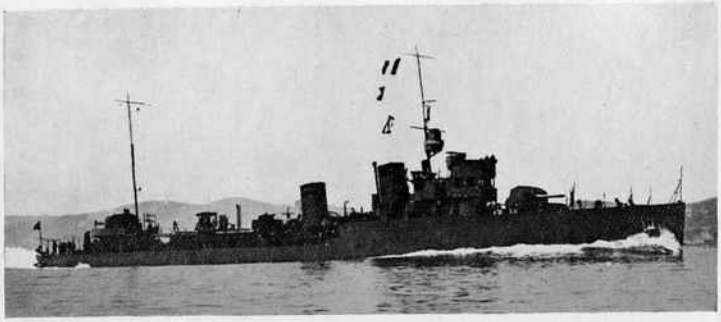
Mean speed on trials: *Euro* 38·9; *Aquilone* 39·5; *Borea* 36·5; *Espero* 38·4; *Nembo* 38·4; *Turbine* 39·5.

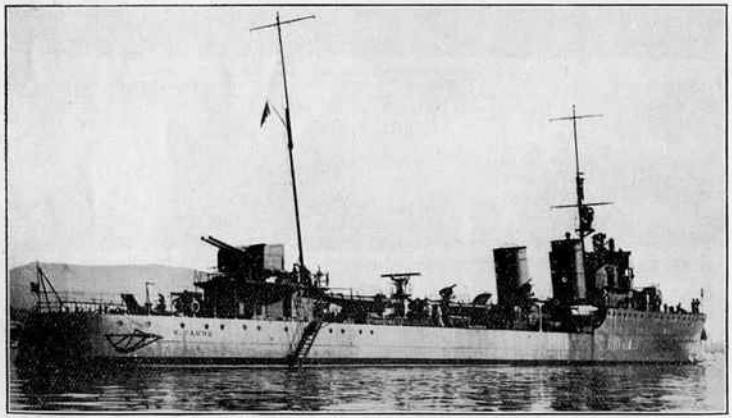
TURBINE. 1931 *Photo, Capitan M. Mille.*



BOREA. (Note control tower on bridge.) 1931 *Official Photo.*

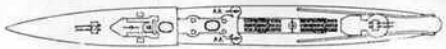
4 Sauro class. (Minelayers.)





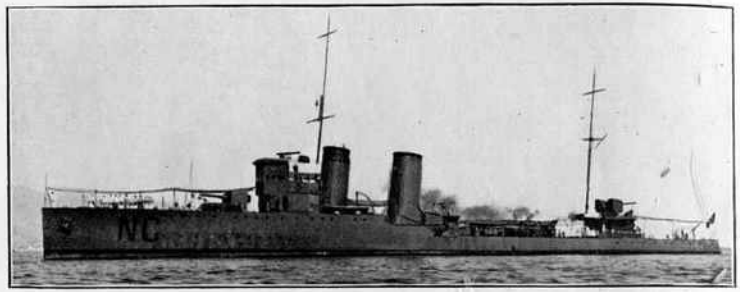
SAURO. 1927 *Official Photo.*

2 *Odero* boats: ***Cesare Battisti*** (11th Dec., 1926), ***Nazario Sauro*** (12th May, 1926).
2 *Quarnaro* boats: ***Daniele Manin*** (24th June 1925), ***Francesco Nullo*** (Oct., 1925). All designed by Odero and laid down 1924. Displacement: 1050 tons *standard*. Dimensions: 295½ × 30½ × 10½ feet. Parsons geared turbines. 3 Thornycroft oil-fired boilers, with superheaters. S.H.P. 32,000 = 35 kts. (On trials, *N. Sauro* 37,000 = 36.5, *D. Manin* 36.8). Guns: **4**—4.7 inch, **3**—40 m/m. AA., **4** M.G. Tubes: **6**—21 inch, in triple deck mountings. 30 mines carried. Oil: 230 tons.
Mean speeds on trials: *Sauro* 36·5; *Battisti* 37; *Nullo* 37; *Manin* 36·8.

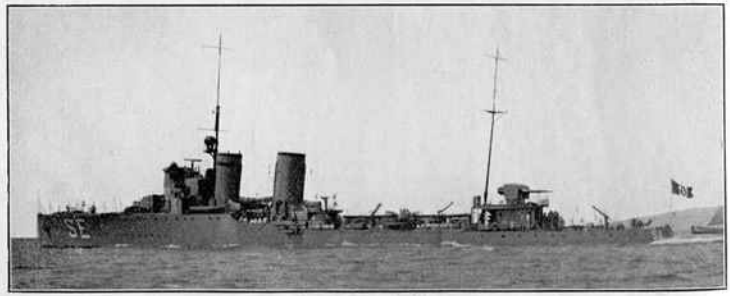


Deck plan, *Sauro* and *Turbine* classes.

4 Sella class ("Improved Palestro design").
(All fitted as Minelayers).



G. NICOTERA. 1928 *Photo, Pucci.*

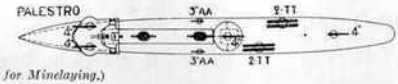


Q. SELLA. 1926 *Photo, by courtesy of Ministry of Marine.*

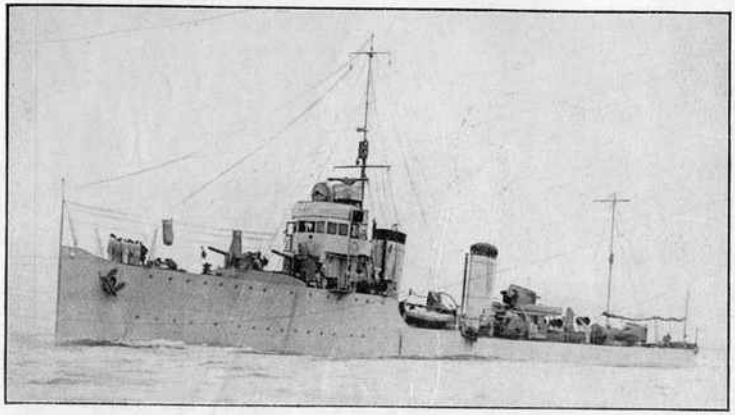
4 *Pattison* type: ***Francesco Crispi*** (Oct., 1925), ***Giovanni Nicotera*** (24th June, 1926), ***Bettino Ricasoli*** (29th Jan., 1926), ***Quintino Sella*** (25th April, 1925). All laid down 1922-23. 935 tons *standard*. Dimensions: 270½ × 27 × 9¼ feet. Guns: **3**—4.7 inch (45 cal.), **2**—40 m/m. AA., **6** M.G. Torpedo tubes: **4**—21 inch in two pairs. Machinery: Turbines (Belluzzo in *Crispi*, Parsons in others). 28,000 S.H.P. = 35 kts. (Trial speeds have been from 35.9 to 38 kts.) 3 Thornycroft boilers. Oil fuel: 200 tons *normal*, 255 tons *max.* Radius: 2750 miles at 15 kts. Complement, 120.

Mean speeds on trials: *Crispi* 38·6, with H.P. 35,540, 39·4 *max.*; *Sella* 37·3, with H.P. 35,090, 38·6 *max.*

8 Palestro/Curtatone class.



(All fitted for Minelaying.)



SAN MARTINO. *Photo aided* 1925.

8 ORLANDO TYPE, VIZ.:—

4 *Palestro* class: ***Confienza*** (1920), ***Palestro*** (1919), ***San Martino*** (1920), ***Solferino*** (1920). 882 tons *standard* (1076 *full load*). Dimensions: 256½ (*p.p.*) × 24¾ × 8¼ feet (*mean*). Guns: 4—4 inch, 45 cal., 2—3 inch, 40 cal. AA., 4 M.G. Tubes: 4—18 inch in twin deck mountings. 10 mines carried. 2 Zoelly turbines. Designed S.H.P. 18,000 = 32 kts. Trials: 22,000 = 31·1 to 32·4 kts. 4 Thornycroft boilers. 2 screws. Oil: 170 tons. Complement, 105.

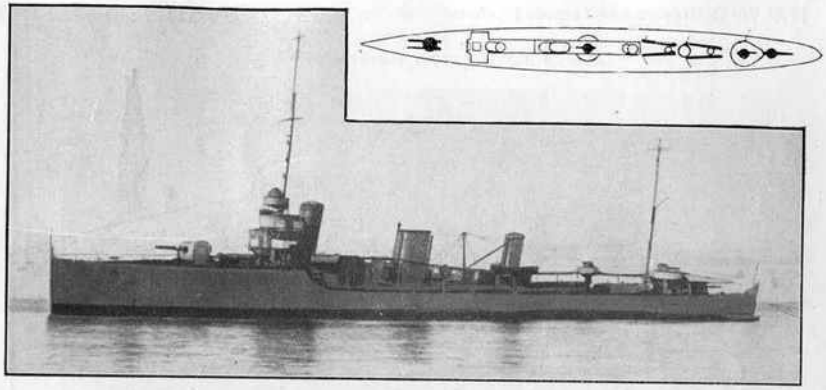
Mean speeds on trials: *Palestro* 32·4; *Solferino* 31·9; *S. Martino* 31·1; *Confienza* 32·2.

CURTATONE

MONZAMBANO. 1924 *Photo, by courtesy of Flli. Orlando.*

4 *Curtatone* class: ***Calatafimi*** (17th March, 1923), ***Castelfidardo*** (1923), ***Curtatone*** (1922), ***Monzambano*** (6th August, 1923). 906 tons (1190 *full load*). Length (*p.p.* 262½ feet. Designed S.H.P. 18,000 = 32 kts. Trials: H.P. 27,500 = 34 kts. Other details as *Palestro* class, but 4 inch guns are in pairs, and there are 6—18 inch tubes in triple deck mountings as plan above.

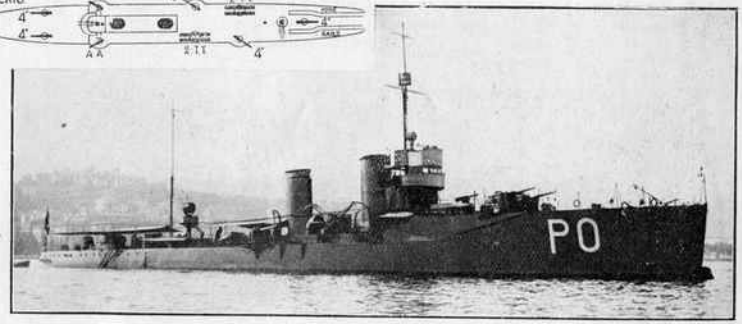
Mean speeds on trials: *Curtatone* 36·6; *Castelfidardo* 35·5; *Calatafimi* 33·3; *Monzambano* 33·5.



C. ROSSAROL. 1925 *Photo, Bassan.*

1 *Blohm & Voss* boat: ***Cesare Rossarol*** (ex-German *B 97*, 1914). 745 tons. Dimensions: 321.5 × 30⅓ × 9.4 feet. Guns and tubes: 3—4.7 inch, 2—3 inch AA., 4 M.G., AA., 4—19.7 inch tubes, in 2 twin deck mounts. Turbines and Schulz-Thornycroft boilers. Designed S.H.P. 40,000 = 34 kts. (Made 36 kts. on *trials* and is reported to have reached this speed under normal conditions in 1926). Oil: 150 tons *normal*, 529 tons *maximum* = 2620 miles at 20 kts. Taken over by Italy, 1920. Complement, 114. Carries 24 mines.

2 Poerio class (Minelayers)



A. POERIO. 1925 *Photo, Pucci.*

2 *Ansaldo* type: ***Alessandro Poerio*** (1914), ***Guglielmo Pepe*** (1914). 845 tons (1028 *deep load*). Dimensions: [illegible] (*p.p.*) × 26·3 × 9·3 feet. Armament: 5—4 inch, 2—40 m/m. AA., 2 M.G. 4—18 inch tubes in two twin-deck mountings. H.P. 22,500 = 32 kts. 3 Yarrow oil-burning 2-shaft boilers. Parsons turbines. Oil: 200 tons. Endurance: 2930 miles (15 kts.). 745 miles (full speed). *Trials:* 33.4 kts. Fitted as Minelayers. Complement, 137.

DESTROYERS AND TORPEDO BOATS.

1 Ex-German Destroyer.

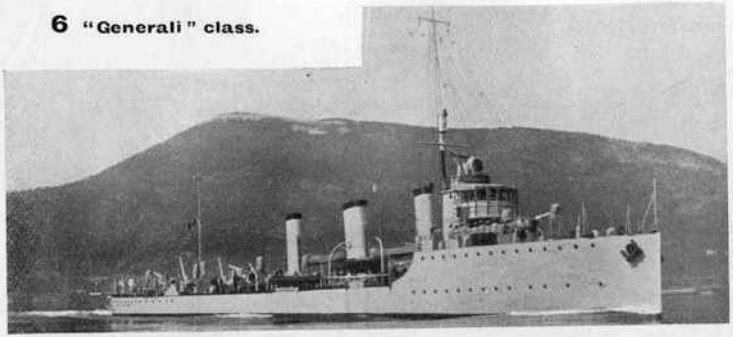
1930 *Photo, Official.*

1 *Schichau* boat: ***Ardimentoso*** (ex-German *S63*, 1915). 804 tons (1050 *deep load*). Dimensions: 273.4 × 27¼ × 9.2 feet. Guns and tubes: 3—4 inch, 2—40 m/m. AA. 2 M.G.; 4—19.7 inch tubes, in two twin mountings. Schichau turbines and Yarrow boilers. S.H.P. 24,000 = 33 kts. Oil: 162 tons *normal*, 280 tons *max.* = 1960 miles at 20 kts. Taken over by Italy, 1920. Complement, 85.
Was fitted to carry 24 mines when first completed. Forecastle well deck built-in, circa 1928.

4 Torpedo Boats.

2 boats: ***Spica, Astore,*** ordered 1932 from Soc. Scali e Bacini Napoletani.
Displacement: 615 tons.
Guns: 3—4 inch.
Tubes: 2—18 inch.
2 boats similar ordered in 1933.

6 "Generali" class.

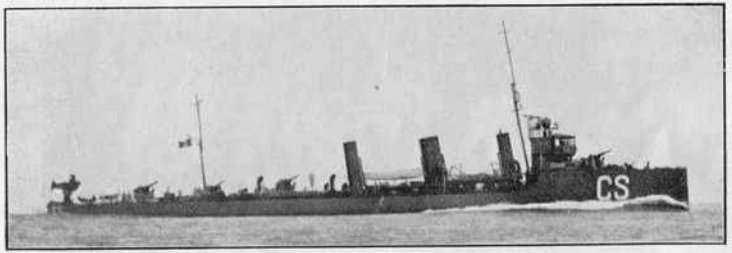


GENERALE ANTONIO CANTORE. (Fore funnel now raised.) 1922 *Photo.*

6 *Odero* type: ***Generale Achille Papa*** (1921), ***Generale Antonio Cantore*** (April, 1921), ***Generale Antonino Cascino*** (1922), ***Generale Antonio Chinotto*** (1921), ***Generale Carlo Montanari*** (1922), ***Generale Marcello Prestinari*** (1922). Displacement: 635 tons. Dimensions: 237·9 × 23·9 × 9 feet. Guns: 3—4 inch, 45 cal., 2—3 inch AA., 2 M.G. Tubes: 4—18 inch in two twin deck mountings. Tosi Turbines. S.H.P. 17,000 = 33 kts. (*about* 30 kts. best speed now). 4 Thornycroft boilers. Oil: 150 tons. Complement, 105. Radius: 2200 miles at 14 kts.; 600 miles at 33 kts.

7 Cosenz class. (*Minelayers.*)

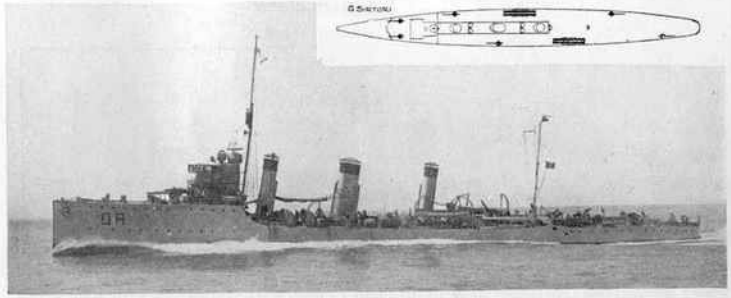
Deck Plan of COSENZ class (*Generale* class similar, but only 1—4 inch on forecastle).



E. COSENZ. 1925 *Photo, Pucci.*

7 *Odero* type: ***Enrico Cosenz*** (ex-*Agostino Bertani*), ***Giacomo Medici, Giuseppe la Farina, Nicola Fabrizi*** (all 1917): ***Angelo Bassini, Giacinto Carini, Giuseppe la Masa,*** (all 1916). 625 tons (810 *full load*). Dimensions: 238 (*p.p.*) × 24 × 9·2 feet (*mean*). Guns: 4—4 inch, 2—3 inch, AA. 4 M.G. Tubes (in all): 4—18 inch, in two twin-deck mountings, 10 mines carried. S.H.P. 17,000 = 33 kts. (On trials made 34.1 kts. Now good for *about* 30 kts.) Fuel: 150 tons. Complement, 100. 2 Tosi turbines. 4 Thornycroft oil-burning boilers. 2 screws. Endurance: 1700 miles (15 kts.), 470 miles (full speed). *Benedetto Cairoli* of this class, lost during War.

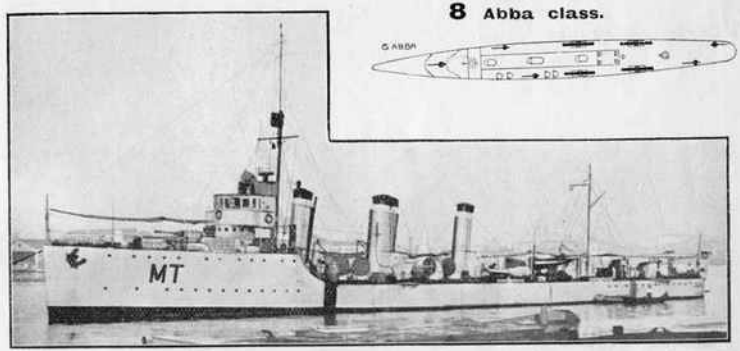
4 Sirtori class. (Minelayers). *continued.*



V. ORSINI. 1919 *Photo, Commr. Holberton, R.N.*

4 *Odero* type: ***Giuseppe Sirtori, Francesco Stocco, Giovanni Acerbi, Vicenzo Orsini*** (all 1916). Displacement: 669 tons. *Standard* Dimensions: 238 (*p.p.*) × 24 × 9'2 feet (*mean*). Guns: 6—4 inch, 35 cal., 2—40 m/m. AA, 4 M.G. Tubes: 4—18 inch, in twin mountings. 2 Tosi turbines. S.H.P. 17,000 = 32 kts. 4 Thornycroft oil-burning boilers. 2 screws. Radius: 1700 miles at 15 kts., 470 miles at 33 kts. Fuel: 150 tons. Complement, 100. Carry 10 mines.

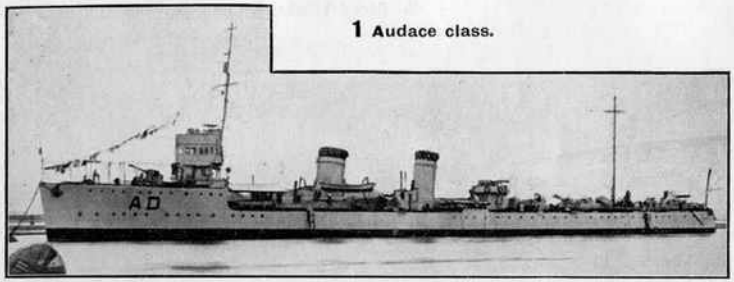
8 Abba class.



ANTONIO MOSTO. 1925 *Photo, Basson.*

2 *Pattison* boats: ***Fratelli Cairoli***, (*Ex-Francesco Nullo*), ***Antonio Mosto,*** (both 1914).
6 *Odero* boats: ***Rosolino Pilo, Giuseppe Abba, Ippolito Nievo, Simone Schiaffino, Giuseppe Dezza*** (*Ex-Pilade Bronzetti*), (all 1914), ***Giuseppe Missori*** (1915). 615 tons. Dimensions: 236,2 (*p.p.*) × 24 × 8.8 feet (*mean*). Guns: 5—4 inch, 2—40 m/m. AA. 4 M.G. Tubes: 4 single 18 inch. Made about 31.8 kts. on trials. 2 Tosi turbines and 4 Thornycroft oil-burning boilers. 2 screws. Endurance: 1700 miles 15 (kts.) 440 miles (full speed). S.H.P. 17,000 = 32 to 33·8 kts. except 2 Pattison boats, S.H.P. 14,500 = 30·8 kts. Fuel: 150 tons. Complement, 94.

1 Audace class.

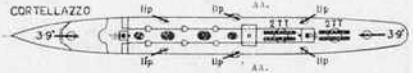


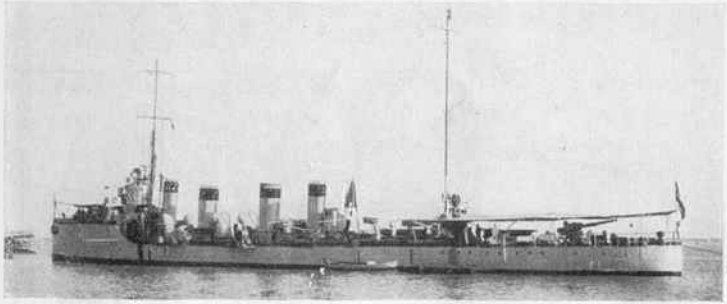
AUDACE. 1925 *Photo, Bassan.*

1 *Yarrow* type: ***Audace*** (ex-Japanese *Kawakaze*, Scotstoun, Glasgow, 1915). 629 tons (over 1000 tons *full load*). Dimensions: 275 (*p.p.*), 283 (*o.a.*) × 27½ × 9½ feet (*mean.*). Guns: 7—4 inch, 2—40 m/m. AA. 4 M.G. Tubes: 4 - 18 inch, in two twin mountings. Fuel: 252 tons. 2-shaft Brown-Curtis turbines and 3 Yarrow large-tube, oil-burning boilers. Endurance: 2180 miles (15 kts.), 560 miles (full speed). S.H.P. 22,000 = 30 kts. Complement, 113.

Note.—This boat must not be confused with *Audace* built in 1912-13 by Orlando as a sister boat to *Animoso* (v. next page). The Orlando *Audace* was sunk during the War, and the Japanese *Kawakaze* (closely resembling the lost *Audace*) was purchased by Italy and re-named *Audace*.

4 Cortellazzo class (ex-Austrian).

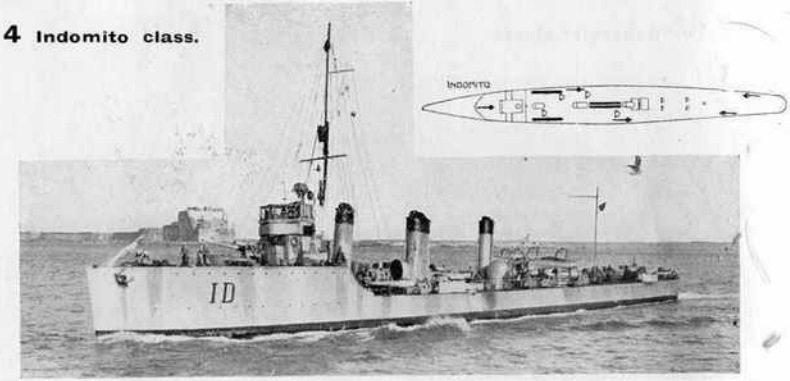




1922 *Photo, G. F. Jewitt, Esq.*

4 *Ganz-Danubius* type: ***Cortellazzo*** (ex-*Lika*), ***Grado*** (ex-*Triglav*), ***Monfalcone*** (ex-*Uzsok*), all built 1914-17; ***Zenson*** (ex *Pola*), (ex-*Orjen*, 1913). 562 tons. Dim.: 274 × 27½ × 8½ feet. Guns and torpedo tubes (Austrian). 2—3.9 inch, 4—66 m/m., 2—66 m/m., AA. 4 M.G. and 4—20.8 inch tubes. A. E. G. turbines and 6 Yarrow boilers. S.H.P. 22,000 to 23,700 = 32 to 32·5 kts. Fuel: 110 tons coal, 140 tons oil. Complement, 114. Added to Italian Navy, Sept., 1920. A fifth of this type, *Mucgia*, was wrecked in Chinese waters, March 15th, 1929. Sister boat, *Matelot Leblanc* (ex-*Dukla*), now in French Navy.

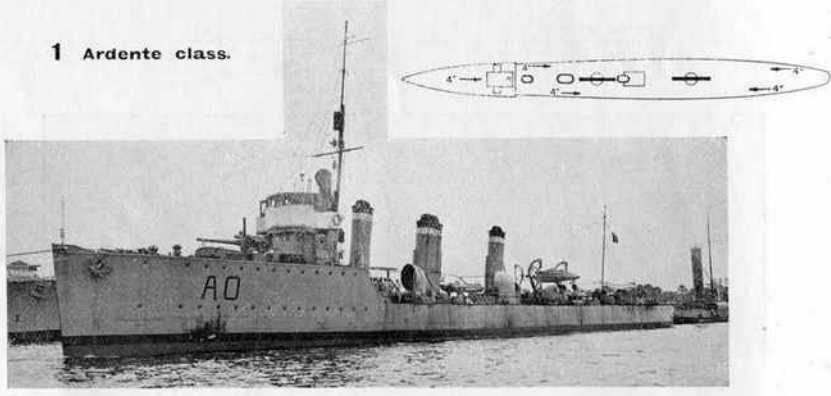
4 Indomito class.



INDOMITO. 1919 *Photo, Commr. Holberton, R.N.*

4 *Pattison* type (Thornycroft design): ***Indomito*** (1912), ***Impavido, Insidioso, Irrequieto*** (1913). 542 tons. Dimensions: 238 (*p.p.*) × 24 × 8.4 feet. Guns: 5—4 inch, 1—40 m/m., 4 M.G. (except *Impavido*, which carries 1—4 inch, 4—3 inch). All believed fitted for minelaying. Tubes: 4—18 inch. *Trials*: S.H.P. 17,000 to 18,000 = 33 to 35·7 kts. 2 Tosi turbines and 4 oil-burning Thornycroft boilers. Fuel: 128 tons. Complement, 94. Endurance: 1520 miles (15 kts.), 360 miles (full speed). *Impetuoso* and *Intrepido* of this class lost in the War.

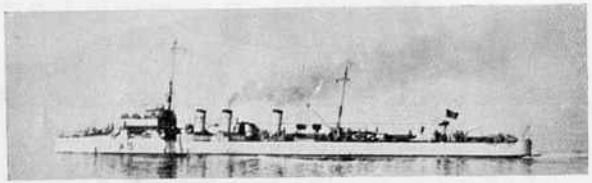
1 Ardente class.



ARDITO. 1919 *Photo, Commr. Holberton, R.N.*

1 *Orlando* type: ***Ardente*** (1912). 562 tons. Dimensions: 238 (*p.p.*) × 24 × 8.4 feet (*mean.*). Guns: 5—4 inch, 1—40 m/m. AA., 4 M.G. Tubes: 2 single 18 inch. On *trials*, 15,700 S.H.P. = 33.4 kts. 2-shaft Parsons turbines and 4 oil-burning Thornycroft boilers. 2 screws. Endurance: 1450 miles at 13·5 kts. 360 miles (full speed). Fuel: 130 tons. Complement, 94. *Audace* lost 1916, *Animoso* stricken 1923, *Ardito* in 1932.

Torpedo Boat



ASCARO. 1919 *Photo.*

1 *Ansaldo* type:—**Fuciliere** (1309) 320/424 tons. Dimensions: 211½ (*p.p.*) × 20 × 6½ to 7 feet (*mean*). Guns: 4—3 inch. 1 M.G. Tubes: 3 single 18 inch. On trials, 6500 I.H.P. = 29·1 kts. 3 Thornycroft boilers and 2 screws. Complement, 50. 99 tons oil fuel. Endurance: 1250 miles at 15 kts. *Garibaldino* lost during War. *Ascaro*, *Pontiere*, scrapped 1929, *Alpino*, *Corazziere* in 1928, *Granatiere* in 1927, *Carabiniere* in 1924, *Artigliere*, *Lanciere* in 1922, *Bersagliere* in 1921.

To be scrapped in the near future.

Coastal Boats.

(2 funnels.) 1919 *Photo, by courtesy of Flli. Orlando.*

2 *Orlando* boats: **74 O.L.T., 75 O.L.T.,** Built at Leghorn. Begun 1917. Launched Oct., 1917-Jan., 1918, finished June-Sept., 1918. 172 tons. Guns: 2—3 inch AA. 1 M.G. Torpedo tubes: 2—18 inch. S.H.P. 4500 = 29 kts. 2-shaft turbines and 2 water-tube boilers. Coal: 29 tons.

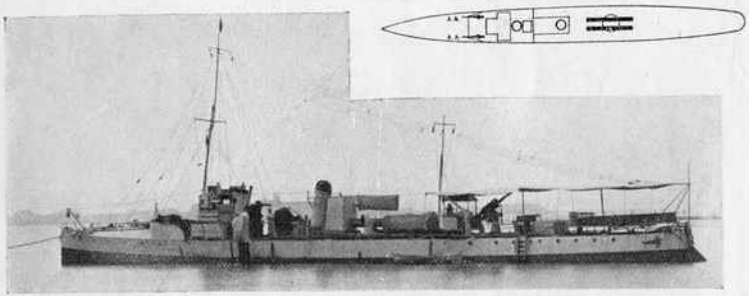
Coastal Boats (*continued*).

63 O.L. 1931 *Photo.*

5 *Orlando* boats: **58 O.L-63 O.L.** Built at Leghorn. Begun 1915-16, launched April-Sept., 1916 Completed May-Oct., 1916. 135 tons *standard*. Guns: 2—3" AA. 1 M.G. Details generally as 11 Pattison boats described on next page. But I.H.P. 3700 = 28.1 kts. 59 O.L. scrapped 1931.

6 *Ansaldo* boats: **52 A.S.-57 A.S.** Built 1915-16 at Sestri-Ponente. Details as 11 Pattison boats described on next page, but 1—3" AA. 1 M.G. 55, 56, 57, carry 2—3" AA.

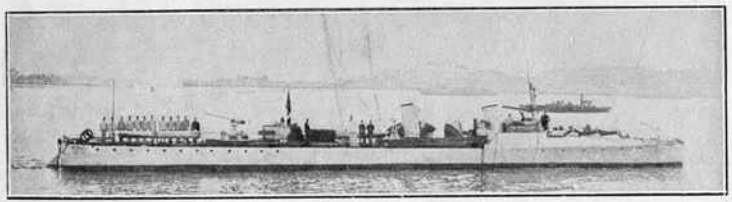
COASTAL TORPEDO BOATS—*continued.*



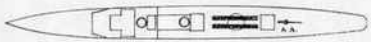
48 O.S. (2 funnels). 1922 *Photo, G. F. Jewett, Esq.*

4 *Odero* boats: ***47, 49-51 O.S.*** Built, 1915-16, at Sestri-Ponente. Details as 11 Pattison boats described in next column, but 1—3" AA. 1 M.G.

7 *Pattison* boats: ***41 P.N., 45 P.N.*** (begun 1915, launched and completed 1916). ***64 P.N., 65 P.N., 69 P.N., 70 P.N.*** (ex *66 P.N*). ***71 P.N.*** (ex-*68 P.N*), (begun 1916 and completed 1917-18). All built at Naples. Displacement 135 tons *standard*. Dimensions: 139¼ × 15 × 5 feet. Guns: 2—14 pdr. AA. 1 M.G. 1 D.C. thrower. Tubes: 2—18 inch in one twin mounting. I.H.P. 3500 = 28 to 28½ kts. Machinery: 2 sets recipro. triple expansion. Boilers: Thornycroft. Oil fuel: 26 tons. 43 P.N. scrapped 1930.



Appearance of all boats as above. *Official Photo.*



7 *Pattison* boats: ***33 P.N.—35 P.N. 38 P.N.*** / ***12 P.N.*** / ***9 P.N.*** / ***7 P.N.***

1 *Ansaldo* boat: ***29 A.S.***

9 boats in all. Launched 1911-13. Completed 1911-14. Average 115 tons. Dimensions. 139¼ × 15 × 5 feet. Guns: 1—14 pdr. 1 M.G. Tubes: 2—18 inch I/S.H.P 2700-3200 = 27·5-31·5 kts. Oil: 15 tons. Complement, 23.

Boilers: 2 Thornycroft oil-burning. Machinery: 2 sets triple expansion. *3 P.N., 17 O.S., 58 P.N.*, lost in War. Other missing numbers removed from effective list.

75 Submarines:

CLASSIFICATION OF TYPES,

(1) Sommergibili di grande crociera.
(Ocean-going.) Displacing more than 1,000 tons. **5 + 4** *building.*

(2) Sommergibili di media crociera.
(Sea-going.) Displacing more than 650 tons. **24 + 6** ,,

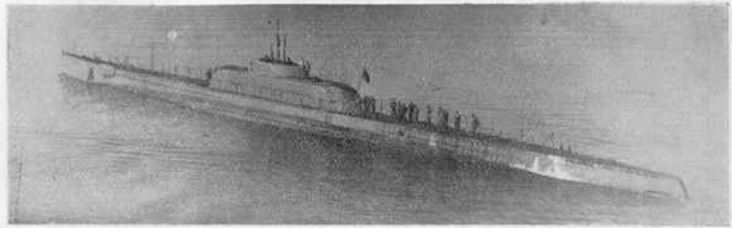
(3) Sommergibili di piccola crociera.
(Coastals.) Displacement under 650 tons. **24 + 12** ,,

(Minelayers may belong to any of these classes.)

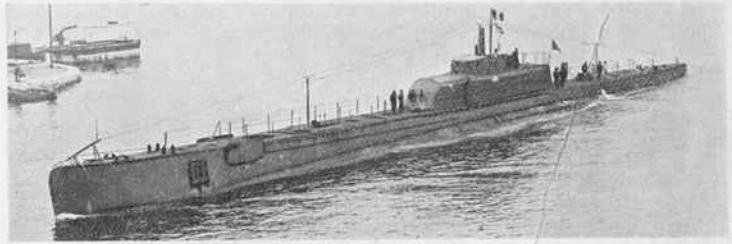
SUBMARINE RECOGNITION LETTERS. (Official List, 1930.)
Painted on Conning Tower.

A A .. Ametista	**G L** .. Galileo	**T S** .. Speri
A N .. Anfitrite	**G T** .. Galatea	**S N** .. Santarosa
A G .. Argonauta	**G U** .. Glauco	**S P** .. Salpa
A H .. Archimede	**J A** .. Jalea	**S B** .. Settembrini
B L .. Balilla	**J N** .. Jantina	**S I** .. Sirena
B A .. Bandiera	**G M** .. Mameli	**S C** .. Sciesa
B N .. Bausan	**M R** .. Manara	**S E** .. Serpente
B G .. Bragadino	**M N** .. Medusa	**R S** .. Settimo
C R .. Corridoni	**M E** .. Menotti	**S M** .. Smeraldo
C N .. Colonna	**M L** .. Millelire	**S Q** .. Squalo
P C .. Capponi	**M C** .. Micca	**T P** .. Topazio
D M .. Diamante	**M O** .. Mocenigo	**T L** .. Torricelli
D L .. Delfino	**N R** .. Narvalo	**T T** .. Toti
G P .. Da Procida	**N A** .. Naiade	**T R** .. Tricheco
D N .. Des Geneys	**N I** .. Nani	**Z A** .. Zaffiro
E M .. Emo	**N E** .. Nereide	
F A .. Ferraris	**O N** .. Ondina	
F M .. Fieramosca	**O A** .. Otaria	
F S .. Fisalia	**P N** .. Pisani	
G A .. Galvani	**R U** .. Rubino	

Ocean-going
1 "Fieramosca" Class.



E. Fieramosca. 1931 *Official Photo.*



E. Fieramosca. 1932 *Photo, Official.*

1 *Bernardis* type: ***Ettore Fieramosca*** (April, 15th, 1929). Laid down August, 1926, by Cantiere Navale Franco Tosi, Taranto. 1,340 tons *surface* displacement, 1,788 tons *submerged*. *Surface* speed with Diesels of 6,000 S.H.P.=19 kts. *Submerged* speed with electric motors of 2,000 H.P.=10 kts. Guns: 1—3·9", 2 M.G., **6**—21 inch tubes. Can carry a small seaplane.

1 Minelayer.

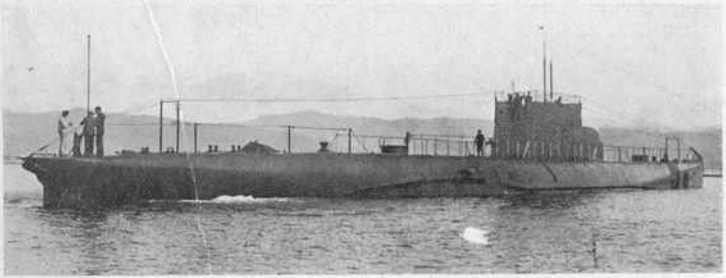
Building.

1 *Cacellini* type: Pietro Micca (Cant. Nav. Franco Tosi, Taranto). Displacement: 1,393/1,913 tons. H.P. 3,200/1,600 =15·5 kts. *surface*, 8·5 kts. *submerged*. Guns: **2**—4·7". Mines: 40. Tubes: **6**—21".

Ocean-going—*continued.*
4 + 3 building "Balilla" Class.

E. Toti. 1931 *Photo, Capitan Mateo Mille.*

Millelire. 1933 *Photo, Pucci.*



D. Millelire (stern view). 1930 *Photo, Capitan Mateo Mille.*

4 *Odero* type: ***Balilla*** (20th Feb., 1927), ***Antonio Sciesa,*** (Aug. 12th, 1928), ***Enrico Toti, Domenico Millelire*** (Sept. 19th, 1927). Built at Spezia by Odero-Terni Co. *Surface* displacement, 1368 tons; *submerged*, 1871 tons. Dimensions: 282 (o.a.) × 24½ × 14 feet *mean* draught. Machinery: 2 sets Fiat Diesels, of H.P. 4000 = 18·5 kts. *on surface*, electric motors of 2200 H.P. = 9·5 kts. *submerged*. Guns: **1**—3·9 inch AA. **4** M.G. Tubes: **6**—21 inch (4 bow, 2 stern), also special long tube aft for minelaying (16 mines carried).

Note.—Above submarines are designed for deep diving, and are of exceptionally strong construction. The design of these boats embodies a number of innovations, such as the placing of the Diesel engines and electric motors much further forward than usual; the elimination of bow hydroplanes; novel distribution of ballast tanks; and an improved form of hull. In consequence, an unprecedented degree of safety, both in diving and manœuvring, is claimed for this type. They were laid down early in 1925. *Millelire* reached a depth of 400 feet in diving trials, May 1928.

3 *Odero* type: Guiseppe Finzi, Pietro Calvi, Enrico Tazzoli (building at Cant. Odero-Terni, Spezia). Displacement: 1,333/1,965 tons. Dimensions: 275 × 25·1 × 14·7 feet. Machinery: 2 Fiat diesels. H.P. 4,400 = 17 kts. Motors: H.P. 950 = 8·5 kts. *submerged*. Guns: **2**—4·7", **2** twin AA. Tubes: **8**—21". Differ from *Balilla* type in not being minelayers.

Sea-going
2 "Corridoni" Class.

F. Corridoni. 1930 *Official Photo.*

Launch of M. Bragadino. 1930 *Official Photo.*

2 *Bernardis* type: ***Mercantonio Bragadino*** (July 3rd, 1929), ***Filippo Corridoni.*** Building by Cant. Nav. F. Tosi, Taranto. Displacement: 815 tons *surface*, 1,085 tons *submerged*. Diesels of H.P. 1,500 = 14 kts. *surface* speed. Electric motors of 1,000 H.P. = 8 kts. *submerged*. Guns: **1**—4", **2** M.G. Tubes: **4**—21". **2** mine-launching chutes. 24 mines.

4 "Santarosa" Class.

C. MENOTTI. 1932 *Photo, Official.*

4 *Bernardis* type, ordered 1927: ***Santorre Santarosa, Ciro Menotti*** (both Odero-Terni Co., Spezia); ***Fratelli Bandiera, Luciano Manara*** (both Cant. Nav. Triestino, Monfalcone, Oct., 1929): Displacement: 815 tons on *surface*, 1,078 tons *submerged*. 2 sets Diesels. (Fiat type in Odero and Monfalcone boats, Tosi in remaining two.) H.P. 3,000 = 17·5 kts. *surface*; electric motors, B.H.P. 1,200 = 9 kts. *submerged*. Guns: 1—4", 2 M.G. Tubes: 8—21". Are an improvement of *Pisani* design. Launched 1929-30.

2 + 4 *building* "Settembrini" Class.

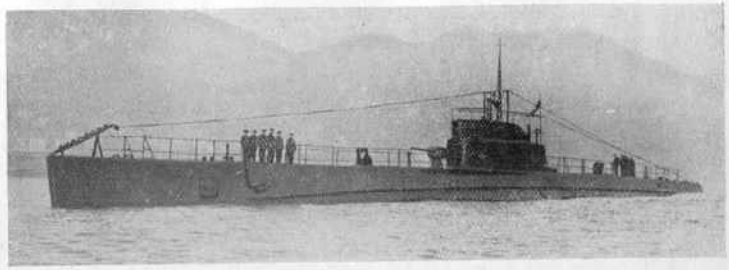
LUIGI SETTEMBRINI. 1930 *Photo, Cap. Mateo Mille.*

Luigi Settembrini, Ruggiero Settimo (Cant. Nav. F. Tosi, Taranto, both launched 1930). 798 tons *surface* and 1,078 tons *submerged*. 2 Tosi-Diesel motors 1,500 H.P. each = 17 knots. Electric motors 650 H.P. each (Ansaldo) = 9 knots *submerged*. Guns: 1—4", 2 M.G. Tubes: 8—21". Radius: 9,000 miles at 8 kts. *surface*, 80 miles *submerged*.

ARCHIMEDE, GALILEO GALILEI, EVANGELISTA TORRICELLI, GALILEO FERRARIS (*Cavallini* type) (Cant. Nav. F. Tosi, Taranto).
Displacement: 880/1,231 tons. Dimensions: 231·2 × 22·2 × 12·7 feet.
Machinery: 2 Tosi-Diesels. H.P. 1,500 = 17 kts. 2 Motors H.P. 650 = 8·5 kts. *submerged*.
Guns: 2—4"/47 cal., 2 AA. M.G.
Tubes: 8—21".

LUIGI SETTEMBRINI 1932 *Photo, Official.*

4 + 2 *building* "Squalo" Class.



SQUALO. 1931 *Photo.*

DELFINO. 1933 *Photo, Pucci.*

4 *Bernardis* type, ordered 1928 from Cant. Nav. Triestino, Monfalcone: ***Delfino, Narvalo, Squalo, Tricheco*** Names translated are respectively *Dolphin, Swordfish, Shark, Walrus.*
Dimensions: 228½ × 19 × 14½ feet.
Displacement: 810/1077 tons.
Machinery: 2 sets Fiat Diesels. H.P. 1500 = 16·5 kts.
2 electric motors. 560 H.P. = 9 kts.
Delfino has dived to 106 m. (347½ feet).
Guns: 1—3·9" 35 cal., 2 M.G.
Tubes: 8—21".
Launched 1929-30

Building

2 *Bernardis* type: GLAUCO, OTARIA (Cant. Riuniti dell' Adriatica, Trieste).
Dimensions: 239 × 23·8 × 14·4 feet.
Displacement: 862/1,231 tons.
Machinery: 2 sets Fiat Diesels. H.P. 1,500 = 17 kts.
2 motors H.P. 560 = 8·5 kts. *submerged*.
Guns: 2—4"/47 cal., 2 AA. M.G.
Tubes: 8—21".

4 "Mameli" class.

G. Mameli. 1928 *Official Photo.*

4 *Cavallini* type: ***Goffredo Mameli*** (ex-*Masaniello*, 9th Dec., 1926), ***Pier Capponi*** (19th June, 1927), ***Tito Speri*** (May 25th, 1928), ***Giovanni da Procida.*** Ordered from Cantiere Navale F. Tosi, Taranto, 1924-25. Displacement: 770 tons *on surface*, 994 tons *submerged*. Dimensions: 213½ × 21½ × 13 feet. 2 Tosi Diesel 8-cyl. 4-cycle engines. H.P. 3000 = 17 kts. *on surface*. Electric motors of 1000 H.P. = 9 kts. *submerged*. Guns: **1**—4 inch. **2** M.G. Torpedo tubes: **6**—21 inch.

Note.—In March, 1929, *G. Mameli* dived to a depth of 64 fathoms during trials, remaining submerged for 20 minutes and in March, 1930, to 350 ft. for 1 hour.

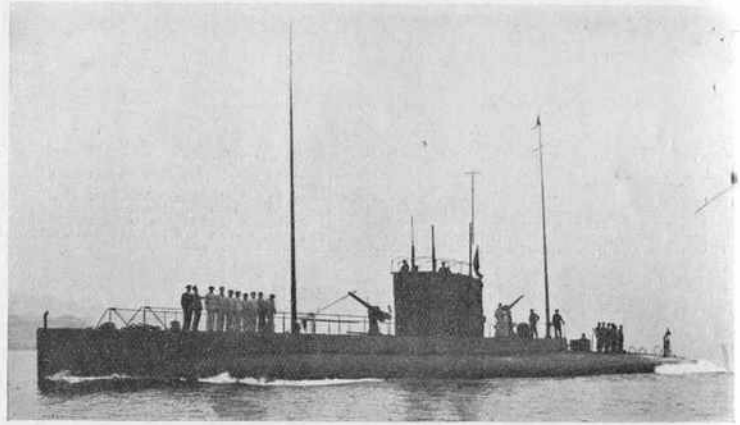
4 "Pisani" class.

Vittor Pisani. 1930 *Official Photo.*

M. Colonna. 1930 *Official Photo.*

4 *Bernardis* type: ***Vittor Pisani, Giovanni Bausan, Marcantonio Colonna, Ammiraglio des Geneys*** (Nov. 14th, 1928). Ordered from Cantiere Navale Triestino, Monfalcone, 1924-25. Displacement: 791 tons *on surface*, 1040 tons *submerged*. Dimensions: 223 × 19 × 14 feet. Machinery: 2 sets Diesels = H.P. 3000 = 17.5 kts. *on surface*. Electric motors of 1000 H.P. = 9 kts. *submerged*. Guns: **1**—4 inch. **2** M.G. Tubes: **6**—21 inch.

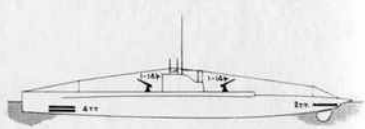
3 "Emo" class.



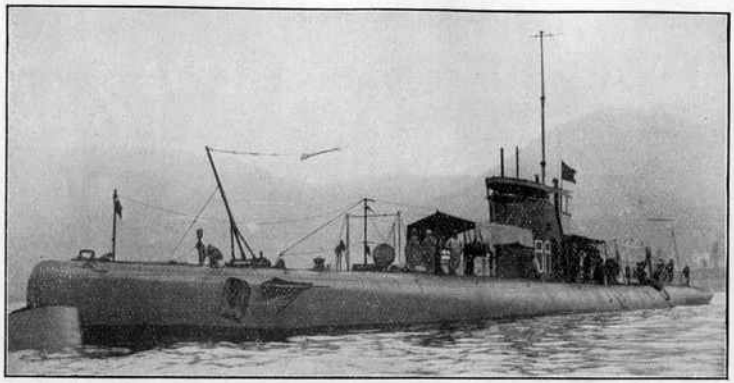
L. Mocenigo. 1930 *Photo, Capitan Mateo Mille.*

3 *Carallini* type: ***Angelo Emo,* Lazzaro Mocenigo, Luigi Galvani,*** (Spezia Navy Yard). Displacement: 730 tons *on surface*, 990 tons *submerged*. Dimensions: 206½ × 19½ × 14 feet. Guns: **2**—3 inch (40 cal.) AA. **1** M.G. **6**—17·7 inch torpedo tubes. Machinery: In first two, 2 Fiat Diesel motors *on surface* and 2 Savigliano electric motors *when submerged*: next pair have 2 Fiat Diesel and 2 Ansaldo electric motors: and *Torricelli* has 2 Tosi Diesel 4-stroke motors *on surface* and 2 Ansaldo electric motors. Carry 35 tons oil fuel. B.H.P. 2600 = 13.7 kts. *on surface*, 1800 = 10.9 kts. *submerged*. Radius 1900 miles at 10 kts. *on surface*, 250 miles at 3·4 kts. *when submerged*. Complement, 37.

*Begun at Venice D.Y., Aug., 1914. Dismantled and taken to Spezia in the summer of 1915 and laid down for a second time. Completed 1918. *E. Torricelli*, *P. Micca* and *L. Marcello*, have been scrapped.

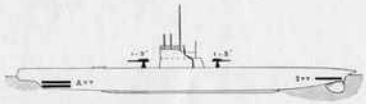


Sea-going Type.



1925 *Photo, Pucci.*

1 *Fiat-Laurenti* type: ***Giacomo Nani*** (Fiat-San Giorgio Co., Spezia, 1915). Displacement: 709 tons *on surface*, 909 tons *when submerged*. Dimensions: 213½ × 19½ × 13½ feet. Guns: **2**—3" AA., **1** M.G. **6**—17.7 inch torpedo tubes. Machinery: 2 Fiat Diesel engines *on surface*, 2 Savigliano electric motors *when submerged*, 2,600 H.P. = 16 kts. *on surface*, 1,400 H.P. = 9.8 kts. *when submerged*. Radius: 1,500 miles at 11.4 kts. *on surface*, 100 miles at 6 kts. *when submerged*. Oil fuel: 36 tons *normal*, 60 tons *maximum*. Complement, 30. Completed 1919. *Sebastiano Veniero* lost, 26th Aug., 1925; *A. Provana, A. Barbarigo*, scrapped, 1927-8.



36 Coastal Boats—(*Sommergibili Costieri*).

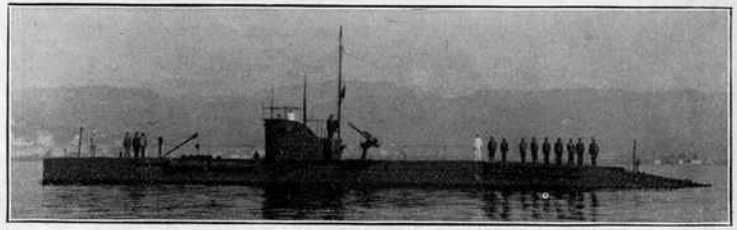
(Under 650 tons).

19 Argonauta Class

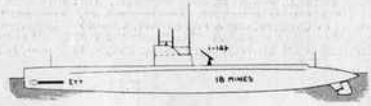
ARGONAUTA 1933 *Photo, Official*

Jalea type:
3 *C.N.T. Monfalcone*: ***Argonauta*** (Jan. '31), ***Fisalia*** (May '31), ***Medusa*** (Dec. '31).
2 *O.T.O. Spezia*: ***Jalea, Jantina*** (May '32).
2 *C. Tosi-Taranto*: ***Serpente*** (Mar. '32), ***Salpa*** (May '32).
Displacement: 509/778 tons. Dimensions: 200 × 16½ × 13 feet. Guns: **1**—4" (102/35), **2** M.G. Tubes: **6**—21". Machinery: 2 × 600 H.P. Diesel-Fiat = 14 kts. 2 × 300 H.P. motors = 8·5 kts.

Sirene type:
6 *Monfalcone*: ***Sirene*** (Jan. '33), ***Naiade*** (Mar. '33), ***Nereide*** (May '33), ***Anfitrite*** (Aug. '33), ***Galatea*** ( ), ***Ondina*** ( ).
2 *C.N. Quarnaro*: ***Diamante*** (May '33), ***Smeraldo*** (July '33).
2 *O.T.O. Muggiano*: ***Ametista*** (Apl. '33), ***Zaffiro*** (June '33).
2 *C.N. Quarnaro*: ***Rubino*** (Mar. '33), ***Topazio*** (May '33).
Displacement: 590/787 tons. Guns: **1**—4" (100/47), **1** M.G. Tubes: **8** (**6**—21", **2**—18" stern). Machinery: 2 × 675 H.P. = 14 kts. Motors: 2 × 400 H.P. × 8·4 kts.



X 3. 1928 *Photo, Pucci.*

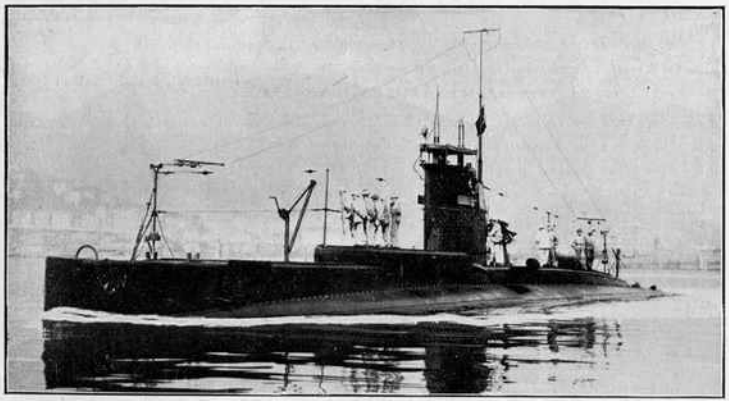


2 *Bernardis* type: ***X2, X3*** (Ansaldo, Sestri Ponente, 1916). Displacement: 389 tons *on surface*; 453 tons *submerged*. Dimensions 140 × 18 × 13 feet. Guns: **1**—3" AA. **1** M.G. Torpedo tubes: **2**—18 inch. Carry 18 mines in 9 discharge chutes. Machinery: 2 Ansaldo Diesel *on surface*: 2 Ansaldo electric *submerged*. 660 H.P. = 10 kts. *on surface*; 320 H.P. = 7·9 kts. *when submerged*. Carry 18 tons of fuel. Radius: 1,360 miles at 6·5 kts. *on surface*; 96 miles at 4 kts. *when submerged*.

Coastal Boats—*continued.*

Photo wanted.

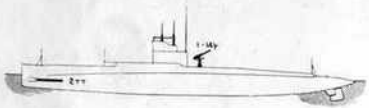
N.6.



1927 *Photo, Pucci.*

2 *Bernardis* type: ***N3, N4,*** (Ansaldo Co., Sestri Ponente, 1916). Displacement, 265 tons *on surface*, 350 tons *when submerged*. Dimensions: 150½ × 14½ × 10 feet. Guns: 1—14 pdr. (30 cal.) AA. 2 bow 18 inch tubes. Machinery: 2 Sulzer-Ansaldo Diesel engines *on surface*; 2 Tecnomasio Italiano electric motors *when submerged*. H.P. 650 = 12·5 kts. *on surface*, 270 H.P. = 7·6 kts. *when submerged*. Oil: 8-10 tons. Radius: 1,300 miles at 10 kts. *on surface*, 200 miles at 2·5 kts. *when submerged*. Complement, 21. Completed, 1917-18.

1 *Bernardis* type: ***N 6*** (1918). Built by Cantiere Navale Franco Tosi, Taranto. Displacement, 276 tons *on surface*, 35 tons *submerged*. Dimensions: 152½ × 14½ × 10 feet. Machinery: 2 Tosi Diesel engines, H.P. 700 = 13·5 kts. *on surface*. Electric motors H.P. 320 = 7·9 kts. *submerged*. Guns: tubes as *N 3—4* below. Completed Dec., 1917.

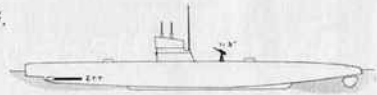


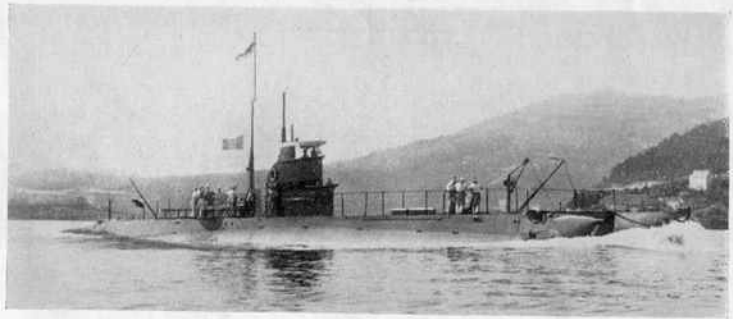
N.6 Similar to ***N 3-4*** but with flush deck.

Coastal Boats—*continued.*

5 *Fiat Laurenti* type: ***F10, F13,*** built by Fiat-San Giorgio Co., Spezia; ***F18,*** by Odero, Sestri Ponente; ***F6, F20,*** built by Orlando, Leghorn, 1916-17. Displacement: 245 tons *on surface*, 318 tons *when submerged*. Dimensions: 149½ × 13½ × 10½ feet. Guns: 1—3 inch (30 cal.) AA. 1 M.G. 2—17.7 inch bow tubes. Machinery: 2 Fiat Diesel *on surface*: 2 Savigliano electric motors *when submerged*. 670 H.P. = 13·5 kts. *on surface*, 250 H.P. = 7·9 kts. *when submerged*. Radius: 1,100 miles at 9 kts. *on surface*, 110 miles at 1·5 kts. *when submerged*. Oil: 12 tons. Complement, 22.

Note.—Missing numbers have been disposed of for scrapping

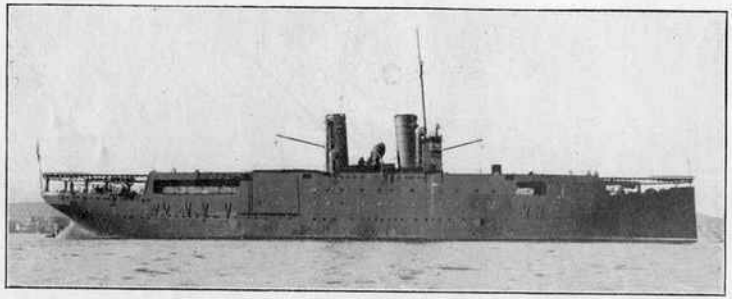




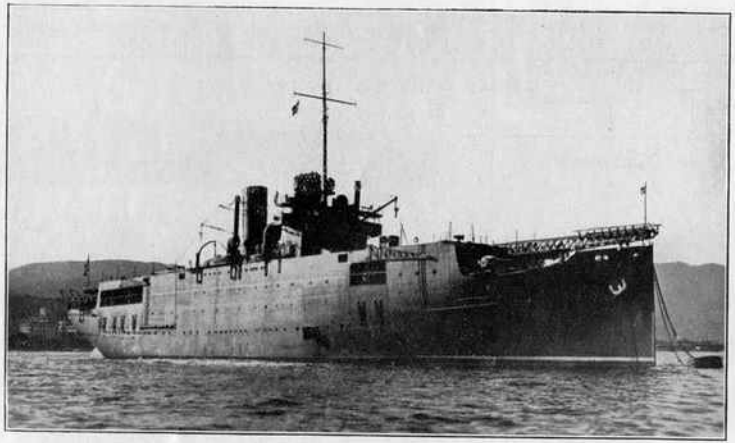
H. 2. 1931 *Photo.*

7 *Holland* type: ***H1, H2*** (1916), ***H3, H4, H6, H7, H8*** (1917), by Canadian Vickers Co., Montreal. Displacement: 341 tons *on surface*, 440 tons *when submerged*. Dimensions: 150½ × 15½ × 12½ feet. Guns: 1—3" (30 cal.) AA. 1 M.G. 4—18 inch bow tubes. Machinery: 2 Nelseco Diesel engines *on surface*; 2 Electric Dynamic Co. motors *when submerged*. 960 H.P. = 12·8 kts. *on surface*, 680 H.P. = 10.8 kts. *when submerged*. Radius: 2,000 miles at 7·5 kts. *on surface*. 130 miles at 2 kts. *when submerged*. Complement, 22. Oil: 18 tons. *H3* War loss.

Aircraft Tender. (*Nave appoggio Idrovolanti*).



G. MIRAGLIA. 1927 *Photo, Capitan Mateo Mille.*

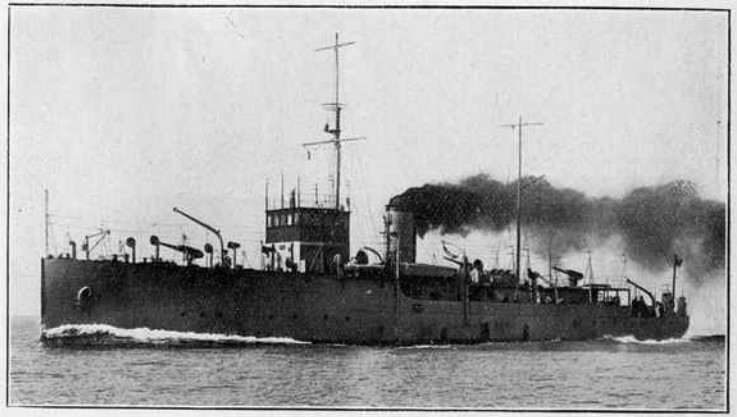


G. MIRAGLIA. 1927 *Photo, Capitan Mateo Mille.*

GIUSEPPE MIRAGLIA (ex-*Citta di Messina*, 20th December, 1923). Displacement: 4,880/5,400 tons Dimensions: 377×49×17 feet. Guns: **4**—4 inch. AA., **1**—M.G. Parsons geared turbines. I H.P. 12,000=21·5 kts. Oil Fuel: 440 tons. Complement, 180. Reconstructed at Spezia D.Y., 1923-25. Carries 4 large and 16 smaller planes, with usual facilities for repairs and renewals and catapults at either end of flight deck for launching planes.

Minelayers. (*Navi Posamine.*)

Note.—Cruisers *Bari, Ancona, Taranto, Brindisi, Venezia, Quarto;* all Flotilla Leaders and many Destroyers and Submarines are fitted for minelaying.



MILAZZO. 1928 *Photo, by courtesy of Builders.*

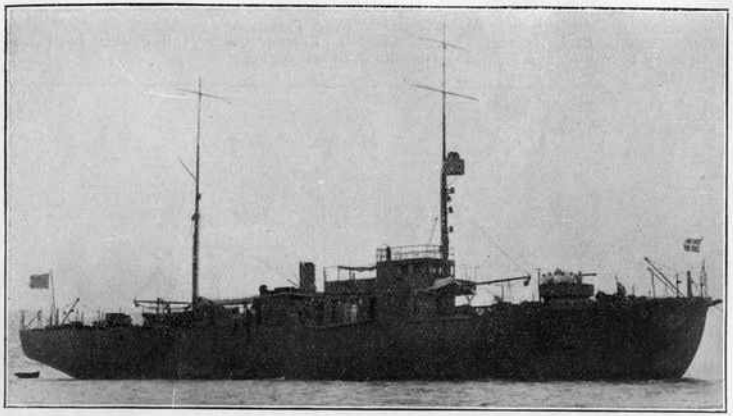
6 *Ostia* type: **AZIO** (May 4th, 1927), **LEGNANO** (May, 1926), **LEPANTO** (May 22nd, 1927), **DARDANELLI** (1925), **MILAZZO** (1925), **OSTIA** (1925). All ordered 1924, the first three from Cant. Nav. Riuniti, Ancona, the second three from Cant. Nav. Triestino, Monfalcone. Displacement, 615 tons (*full load*, 850 tons). Dimensions: 204×28½×8½ feet. H.P. 1,500=15 kts. Oil fuel. Guns: **2**—4 inch, 35 cal., **1**—3 inch AA. First three are to be employed on colonial service, and have an effective radius of 3,500 miles. All fitted for sweeping if required. 80 mines carried.

ALBONA, LAURANA, ROVIGNO (ex-Austrian Minesweepers *M.T.* 130—132). 130 tons. Guns: **1**—3 inch. H.P. 280 = 11 kts.

BRONDOLO. 1920 *Official Photo.*

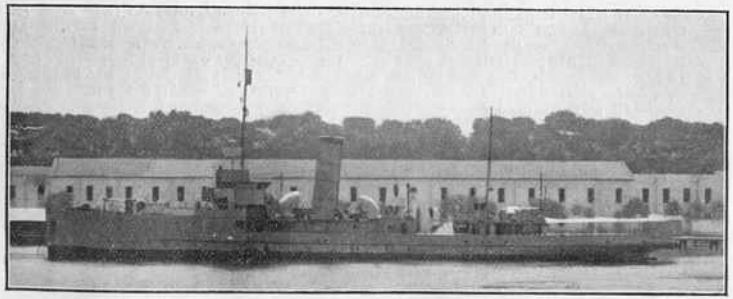
BRONDOLO (1909), **MARGHERA** (1909). 115 tons. Dimensions: 125×11×2¼ feet. Guns: **1**—14 pdr. During War, each fitted to carry and lay 60 mines. Designed H.P., 540 = 13 kts. Coal: 14 tons. Complement, 27.

MINELAYERS AND MINE SWEEPERS.



BUCCARI. 1928 *Photo, Pucci.*

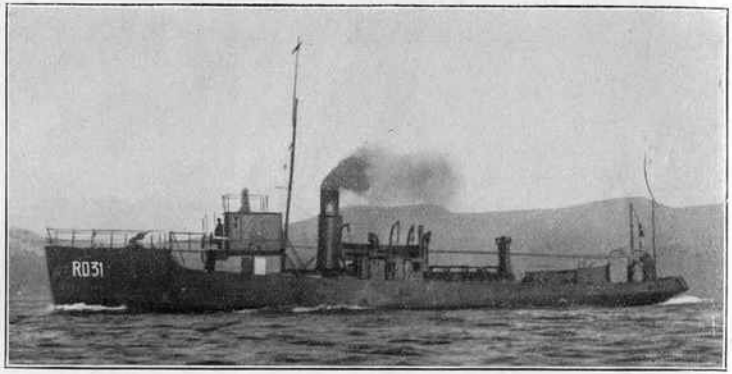
4 *Fasana* type: **BUCCARI** (1926), **DURAZZO** (1st April, 1926), **FASANA** (1924), **PELAGOSA** (1926). All built at Castellamare. 531 tons. Dimensions: 192 (*p.p.*) × 32 × 5.7 feet. Engines: 2 sets Diesel engines, together 700 B.H.P. = 10 kts. Guns: 1—3 inch AA. Carry 54 mines.



VIESTI. 1926 *Photo, by courtesy of Ministry of Marine.*

COTRONE (ex-*Abastro*, ex-German *M* 120), **VIESTI** (ex-*Meteo*, ex-German *M* 119.) Built at Neptun Yard, Rostock, 1918, and taken over by Italy in 1919. Displacement: 515 tons. Dimensions: 182 (*w.l.*), 192 (*o.a.*) × 23½ × 7 feet. I.H.P. 1600=16 kts. Guns: 2—4 inch. 2 smaller.

Mine Sweepers (*Navi Dragamine*).

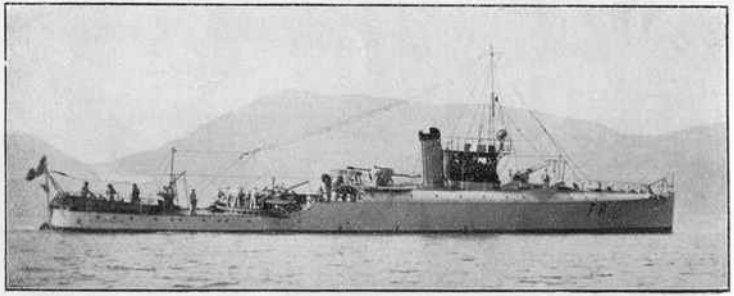


RD 31. 1928 *Photo, Pucci.*

38 small tugs, of 150/170 tons, bearing various numbers, RD 4 to 57, are also fitted for mine sweeping. Majority are H.P. 800 = 13 kts. All armed with 1—3 inch AA.

Convoy Gunboats (*Cannoniere di Scorta*).

5 Bafile class.

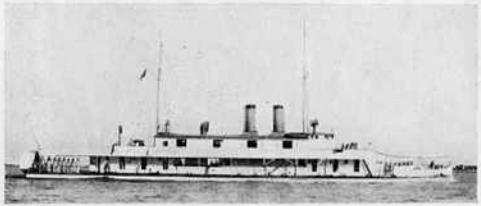


T. FARINATI. 1925 *Photo, by courtesy of the Ministry of Marine.*

5 Pattinon type: ***Alessandro Vitturi, Ernesto Giovannini, Andrea Bafile, Tolosetto Farinati, Carlo del Greco.*** 1919-22. 182 tons. Dimensions: 170·6 × 19 × 5·6 feet. Guns: 2—4 inch. 45 cal., 2 M.G. Torpedo Tubes: 2—18 inch in one twin mounting. S.H.P. 2800 = 23 kts. Trials: H.P. 3270=23.7 kts. Oil: 40 tons. Radius: 900 miles at 20 kts.

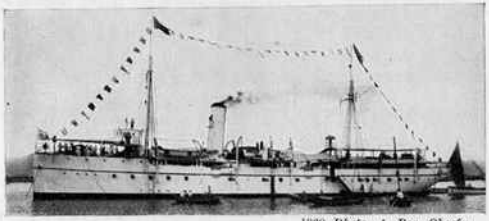
Note.—These vessels are classed officially as "Cannoniere di Scorta" (Convoy Gunboats), but resemble T.B., corresponding in some respects to the British *P*-boats. They were originally designed as small Minelayers, hence shape of hull. A sixth vessel of this class, *E. Rosso*, was burned on stocks and hull scrapped.

Gunboats



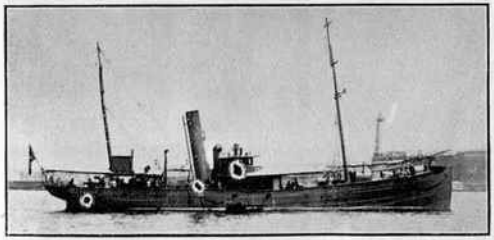
1933 *Photo, Capt. Dante Solimbergo, R.I.N.*

ERMANNO CARLOTTO (Shanghai Dock & Engineering Co. 1921). Shallow-draught river gunboat. 310 tons. Dimensions: 160 × 24½ × 4 feet. Guns: **2**—14 pdr., **6** machine. Designed H.P., 1100 = 14 kts. 2 Yarrow boilers. Complement, 60. Oil, 56 tons. Twin screws in tunnels.



1920 *Photo, A. Boo, Cheefu.*

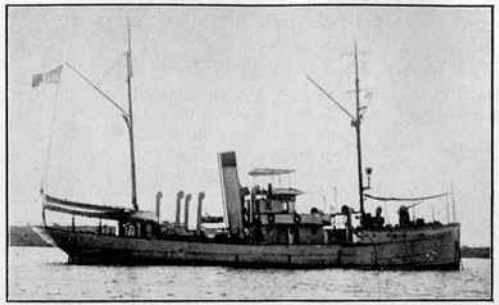
SEBASTIANO CABOTO (Palermo, 1913). Displacement: 877 tons. Complement, 104. Dimensions: 196.8 × 31.8 × 9.2 feet. Guns: **6**—14 pdr., **4** M.G. H.P., 1200 = 13 kts.



PALMAIOLA. 1925 *Photo, by courtesy of the Ministry of Marine.*

PALMAIOLA (ex-*Mary*, 1916). 562 tons. Dimensions: 133 × 19½ × 12 feet. H.P. 380 = 8.5 kts. Guns: **1**—6 pdr. AA.

Gunboats—*continued.*



GEN. ARIMONDI. 1925 *Photo, by courtesy of the Ministry of Marine.*

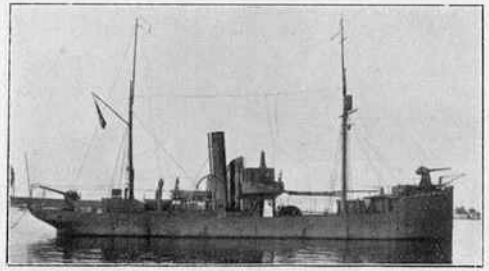
GENERALE ARIMONDI (Glasgow, 1910, purchased 1917, ex-*Gorgo*, ex-*Pelican*). 580 tons. H.P. 540 = 9 kts. Guns: **2**—14 pdr., AA., **2** M.G.

The following were all acquired from Japan, 1917, and are employed in colonial service. All launched 1911-12, and mostly armed with **1** or **2**—14 pdr. AA. Some may carry minesweeping gear.

ALULA (ex-*G 23*, 1912). (Depôt ship, Red Sea). 430 tons. Speed: 13 kts.

PORTO CORSINI (ex-*G 15*, ex-*Fumi Maru*). 380 tons. Speed: 12 kts. Guns: **2**—76 m.m.

RIMINI (ex-*G 16*, ex-*Fuku Maru*). 420 tons. Speed: 9.5 kts. Guns: **2**—76 m.m.



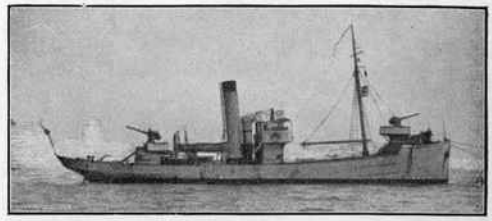
GALLIPOLI. 1929 *Photo, by courtesy of Ministry of Marine.*

GALLIPOLI (ex-*G 31*, ex-*Hakata Maru No. 8*). 400 tons. Speed: 10·5 kts. Guns: **2**—76 m.m.

OTRANTO (ex-*G 36*, ex-*Sumiye Maru*). 385 tons. Speed: 10 kts. Guns: **2**—76 m.m.

MAGGIORE TOSELLI (ex-*G 3*, ex-*Toyo Maru*). 370 tons. Speed: 8 kts.

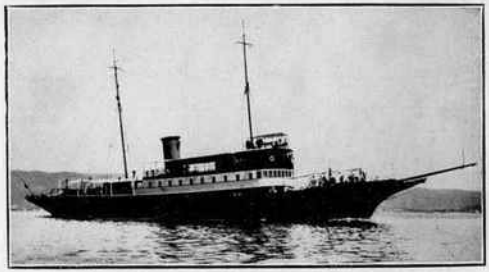
Gunboats—*continued.*



CIRENE. 1925 *Photo, by courtesy of the Ministry of Marine.*

CIRENE (ex-*G 13*, ex-*Hoyo Maru*, 1912). 500 tons. Guns: **2**—14 pdr., AA, **1** M.G. H.P. 300 = 12·3 kts.

VALOROSO (Purchased 1917). 420 tons. Guns: **1**—14 pdr., AA., **1** M.G. H.P. 477 = 10 kts.



1928 *Photo, by courtesy of Ministry of Marine.*

AURORA (ex-*Marcchiaro*, ex-Austrian *Taurus*, ex-*Nirvana*). (D. & W. Henderson, Glasgow, 1904). Reconstructed 1928. Displacement: 950 tons (Std). Dimensions: 261 (*o.a.*) × 30 × 14 feet (*mean*). Triple expansion engines. 2 Pattison boilers. H.P. 3255 = 14·7 kts. Oil: 117 tons. Guns: **2**—76/40 m.m.

Return of Fleets 1933, gives also **AUGUSTA**, completed 1911, 305 tons, H.P. 550—12 kts. Guns 2—3 in. AA.

MISCELLANEOUS VESSELS.

Monitors.

FAA' DI BRUNO (Venice D.Y., 1916-17). 2,845 tons. Dimensions: 220×65·5×6 feet. Guns: **2**—15 inch, 40 cal. H.P. 465 = 3·3 kts.

MONTE GRAPPA, MONTELLO (Castellamare, 1919), 615 tons. Dimensions: 131·3 (*p.p.*) × 32·7 × 5·3 feet. Guns: **1**—15 inch. B.H.P. 355 = 7 kts.

Similar to "Montello."

MONTE CENGIO, MONTE NOVEGNO (Castellamare, 1920). 510 tons. Guns: **1**—15 inch. B.H.P. 355 = 7 kts.

Submarine Chasers (*cacciasommergibili*).

1 boat, 334 tons. Ordered 1932. C.N.R. Genoa.

M. A. S. 92—434 (*Motoscafi Anti-Sommergibili*).

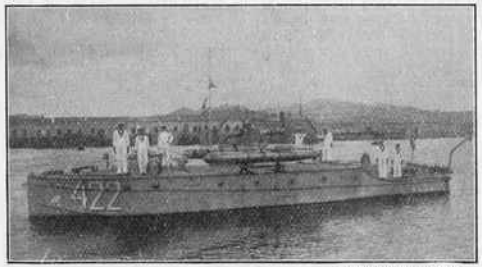
Note.—Correspond to British C.M.B. and M.L. types. Many sold out, scrapped, etc. Present total 43.

New Construction.

3 S.V.A.N. boats.

Nos. **435, 436,** 13·7 tons.
No. **437,** 15 tons.
H.P. 1,500 = ? Kts.

"TIPO VELOCI" (17 boats): 8 S.V.A.N. boats: **M.A.S. 423—426, 430, 432—434.** 1 Baglietto boat: **M.A.S. 431.** 13 tons. Length: 52½ feet. 1500 B.H.P. = 40 kts. 2 M.G. Torpedo tubes: **2.** 5 D.C. carried.



1926 *Official Photo.*

2 S.V.A.N. boats: **M.A.S. 418, 422** (1922). 21 tons. Length: 59 feet. 1200 B.H.P. = 26 kts. 2 M.G. Torpedo tubes: 2—17.7 inch. 3 D.C. carried.

4 Baglietto boats: **M.A.S. 397–400** (1920). 30 tons. Length: 69 feet. Motors (Isotta Fraschini): 1600 B.H.P. = 33 kts. Guns: 2 M.G. Torpedo tubes: 4—18 inch in some.

2 S.V.A.N. boats: **M.A.S. 428, 429** (1925). 31 tons. Length: 72.2 feet. Motors (Isotta Fraschini): 1200 B.H.P. = 28 kts. Guns: **1**—14 pdr., **2** M.G. Torpedo tubes: **2**—18 inch.

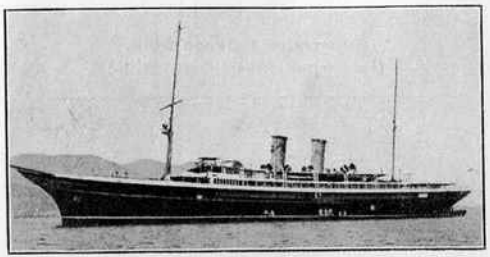
1919 *Photo.*

With two torpedoes. 1919 *Photo.*

"TIPO A": 23 boats (S.V.A.N., Ansaldo, Orlando, Baglietto, etc., 1916-19). 11½—12 tons. Length: 52½ feet. Motors (Isotta Fraschini or Sterling, or F.I.A.T.): 400 to 500 B.H.P. = 22–26·5 kts. Guns: 2 M.G. Several have 2 torpedo tubes or dropping gears: others carry 4 mines.

M.A.S. Nos. **92, 94, 100, 141, 145, 179, 188, 200, 204, 206, 208, 210, 212, 213, 216, 217, 219, 222, 223, 228—230, 320.**

Royal Yacht.



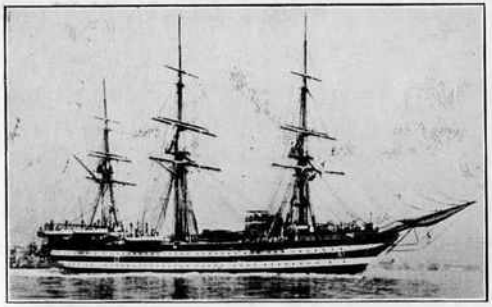
SAVOIA. 1926 *Photo, by courtesy of the Ministry of Marine.*

SAVOIA (ex-*Citta di Palermo*, 1st September, 1923). 5280 tons. Dimensions: 390 (*w.l.*) × 49 × 17 feet. Guns: **4**—14 pdr. AA. 2 sets Parsons geared turbines. 8 Yarrow boilers, oil-fired. I.H.P. 15,750 = 22·4 kts.

Note.—Built at Spezia and reconstructed by Cant. Nav. Riuniti, Palermo, as a yacht.

Training Ships (*Navi Scuola*).

Note.—Old cruisers *S. Giorgio*, *S. Marco* and *Pisa* described on earlier pages, are, or have been employed in Training Service.



C. COLOMBO. 1928 *Photo, Capitan M. Mülle.*

CRISTOFORO COLOMBO (April 4th, 1928). Castellamare. Displ.: 2787 tons. Dims.: 218 (*p.p.*) × 48½ × 20½ feet. Guns: **6**—3 inch AA., **5** M.G. Machinery: 2 Tosi Diesels and 2 Marelli motors. H.P. 1600/1100 = 10·5 kts. 1 screw. Fuel: 103 tons. Radius: 6000 miles at 8 kts.

Notes.—*C. Colombo* usually depends on sail power, machinery being treated as auxiliary. Hull, masts and yards, are all of steel. Loud speakers and echo sounding gear form part of her equipment. About 140 midshipmen and cadets (or an equal number of boys) are usually carried.

Training Ships (*Navi Scuola*).

1932 *Photo, Capt. Ferratti.*

AMERIGO VESPUCCI (March 22, 1930). Castellamare. Displ.: 3543 tons. Dims.: 229·6 × 51 × 22 feet. Guns: **4**—3 inch AA., **9** M.G. Machinery: Two Fiat motors of 1250 H.P. driving 2 Marelli dynamos: single propelling Diesel. 2000 B.H.P. Speed 10 kts. Sail area: 2100 sq. metres. Complement: 400 + 150 midshipmen.

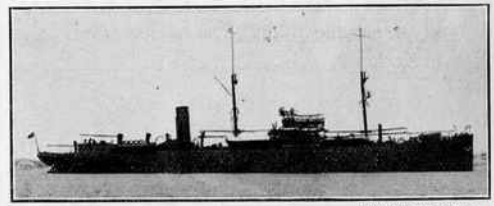
Submarine Depôt Ships.

(*Navi per appoggio sommergibili.*)

1932 *Photo.*

ALESSANDRO VOLTA (ex-*Caprera*, 1921).
ANTONIO PACINOTTI (ex-*Citta di Sassari*, 1922).
Both reconstructed at Castellamare D.Y., 1924-25. 2727 tons. Dims: 288¾ × 36 × 15 feet. Parsons geared turbines. H.P. 4500=19 kts. Guns: **1**—4·7 inch, **2**—3 inch AA. **1**—M.G.

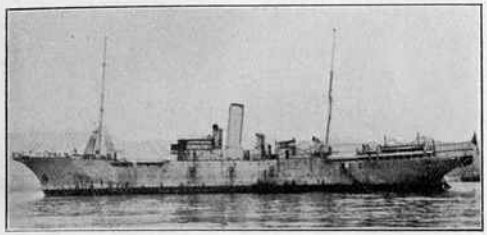
Repair Ship (*Nave Officina*).



1928 *Official Photo.*

QUARNARO (Scoglio Ulivi Yard, Pola, July 30, 1924). 7185 tons. Dimensions: 360 × 48½ × 22 feet. Triple expansion engines. H.P. 2,300=11·5 kts. Guns: **3**—4 inch AA., **1** M.G.

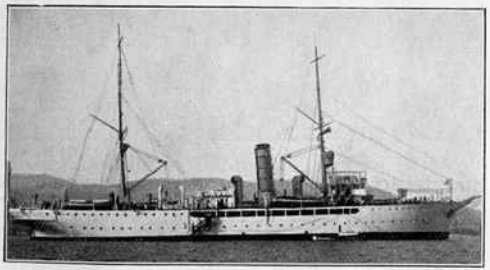
Research Ship (*Navi Posacavi*).



CITTA DI MILANO. 1929 *Official Photo.*

CITTA DI MILANO (ex *Grossherzog von Oldenburg*, 1905). 5900 tons. Dimensions: 305 × ? × ? feet. Guns: 2—4 inch, 1—3″ AA., 1 M.G. Speed: 11.5 kts. (Originally intended for cable laying.)

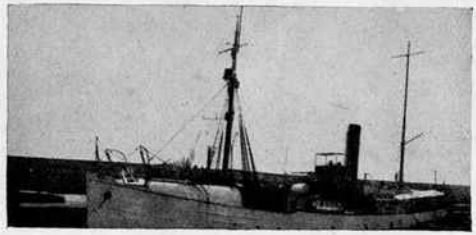
Surveying Ships (*Navi Idrografiche*).



AM. MAGNAGHI. 1929 *Photo, Capitan M. Mille, R.Sp.N.*

AMMIRAGLIO MAGNAGHI (Ansaldo, –/8/14). 2050 tons. Complement, 137. Dimensions: 229½ × 37½ × 12½ feet. Guns: 4—3″ AA. I.H.P., 2000 = 14 kts. Machinery: 2 sets vertical triple expansion. Boilers: 4 cylindrical. Was originally laid down as a Passenger Steamer.

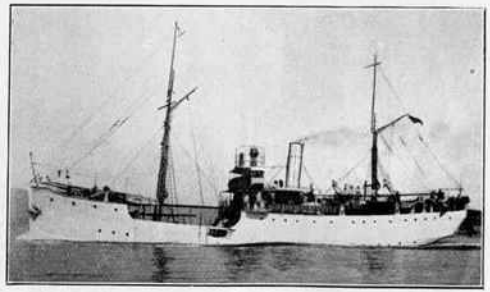
Surveying Ships—*continued.*



SCILLA. 1929 *Official Photo.*

SCILLA (ex-*Panaria*, ex-*Fantasma*, 1916). 470 tons. Guns: 2—6 pdr. H.P. 450 = 11 kts.

CARIDDI (ex-*G.21*, 1917). 440 tons. Guns: 2—6 pdr. Speed: 10 kts.

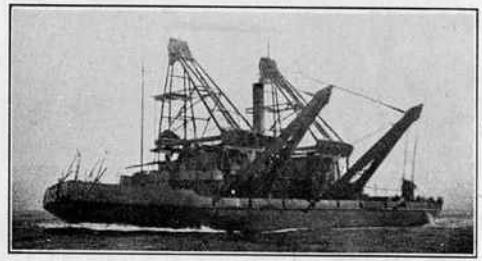


TRITONE. 1929 *Official Photo.*

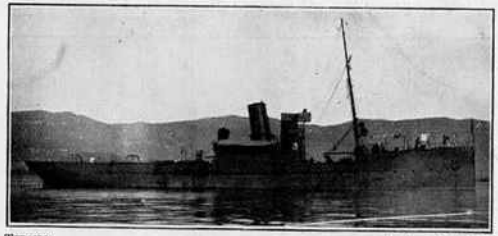
TRITONE (ex-*G.19*, ex-*Tamashima Maru*, 1913). 450 tons. H.P. 450 = 10 kts. Guns: 2—3″ AA. 2 M.G.

Submarine Salvage Ship.

(*Pontone per ricupero Sommergibili.*)



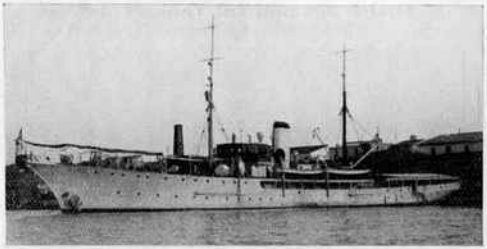
ANTEO (Smulders, Schiedam, 1914). Special Salvage Ship for Submarines. 2100 tons. Dimensions: 164 × 73¾ × ? feet. I.H.P., 750 = 8 kts. 2 screws. 2 cyl. boilers. 2 cranes, each lifting 200 tons.



TITANO. *Photo added* 1927.

TITANO (1913). High Sea Tug. 970 tons. Guns: 2—6 pdr. H.P., 1970 = 15 kts. 2 screws. 2 Gennardini boilers. Coal: 160 tons. (s/m Salvage ship.)

High Sea Tugs (*Rimorchiatori d'Alto Mare*).



1932 *Photo, Official.*

GIASONE (*built* at Cantiere Breda, Venice). Displacement, 1,354 tons. Dimensions: 210 × 33¾ × 13 feet. H.P. 2,500. Guns: **2**—3 pdr. AA.

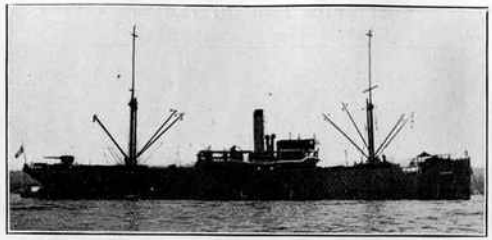
CICLOPE. 1930 *Photo, Capitan M. Mille.*

CICLOPE (1903). 840 tons. Guns: **2**—6 pdr. H.P. 1,900 = 13.6 kts. 2 screws. Pattison boilers.

Note.—There are 70 Tugs of 350—500 tons and 104 smaller Tugs.

POLIFEMO (ex-*Einigkeit*, 1925). Salvage Vessel and Tug. 1,180 tons. H.P. 1,250 = 12 kts. Thornycroft boilers. Guns: **2**—3″ AA.

Transports (*Trasporti*).



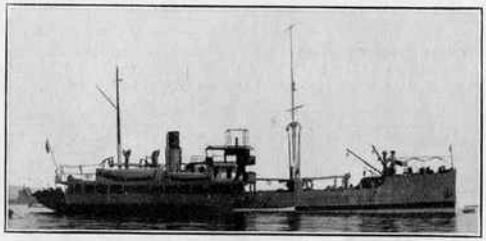
CHERSO. 1928 *Photo, Pucci.*

CHERSO (ex-*Amalfi*), **LUSSIN** (ex-*Marsala*). Built by Neptun Yard, Rostock. Displacement: 4,500 tons. Dimensions: 300×41×17½ feet. H.P. 1,100=10·5 kts. Guns: **4**—4.7 inch., **1**—3″, **2**—3″ AA. Classed as "*Navi Trasporto Materiale*." Cargo: 3,000 tons.

GIANNUTRI (ex-*Elba*, 1915). 770 tons. Guns: **4**—3 inch AA. H.P. 1,150 = 13.3 kts.

TRIPOLI (1928). 2,500 (s) tons. H.P. 600 = 8·5. Guns: Nil.

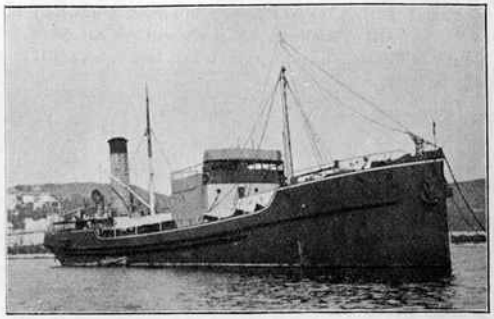
Munition Carriers. (*Navi Trasporto Munizioni.*)



BUFFOLUTO. 1928 *Photo, Pucci.*

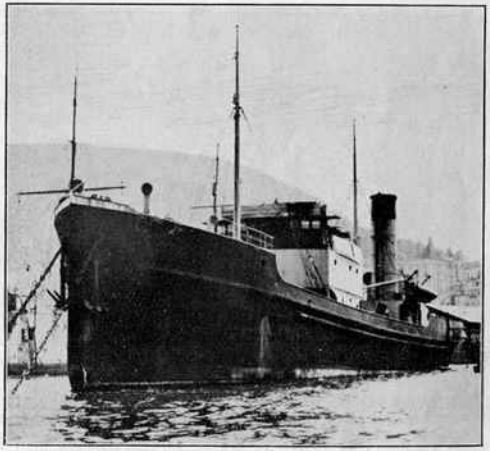
PANIGAGLIA (10th July, 1923), **BUFFOLUTO** (1924), **VALLELUNGA** (1924). All built by Ansaldo San Giorgio Co. 1,035 tons Dimensions: 184½ (*o.a.*), 172½ (*p.p.*)×29½×11 feet. Guns: **2**—4 inch, **1**—40 m/m. AA. H.P. 1,500=12 kts. Radius at this speed, 960 miles.

Fuel Ships & Oil Tankers



NIOBE. 1929 *Photo, by courtesy of Ministry of Marine.*

NIOBE (ex-German *Sylt*, Reiherstieg Yard, Hamburg, 1916). Collier. 3,400 tons. Speed: 11 kts. Guns: **2**—4.7 inch, **1**—14 pdr. AA. Cargo capacity: 2,000 tons coal.



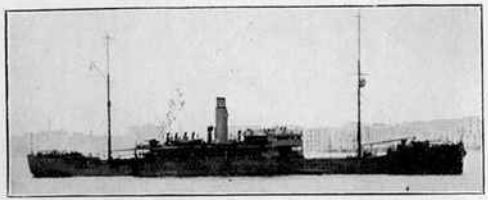
CERERE. 1929 *Photo, by courtesy of Ministry of Marine.*

CERERE (ex-*Baltrum*, 1915). 2,730 tons. Speed: 10 kts. Guns: **1**—4.7 inch, **2**—3 inch AA. Capacity: 1,500 tons.

MARTE (ex-Austrian *Vesta*) (Armstrong, 1892). 2,500 tons. I.H.P. 1,200=10 kts.

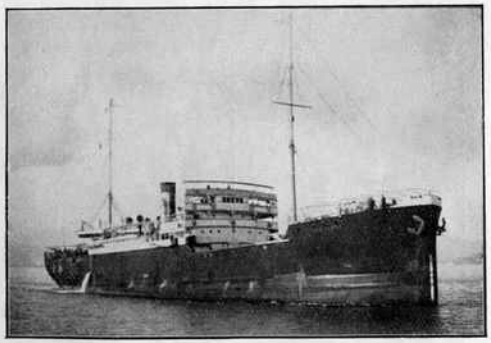
Fuel Ships (*Navi rifornimento carbone e naftetine*), and Oil Tankers (*Navi Cisterne per nafta*).

Note.—A 2000 ton Oiler is reported to have been ordered in 1928.



1928 *Photo, by courtesy of Ministry of Marine.*

TARVISIO. Oil Tanker (Castellamare, April 11th, 1927). 11,700 tons. Dimensions: 468·8 × 52 × 24½ feet. H.P. 2,800 = 11 kts. Guns: 4—4·7 inch, 2—3 inch AA. Cargo: 8,000 tons. Protective arrangements as *Brennero*.



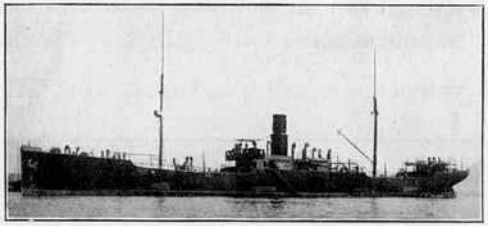
BRENNERO. 1925 *Photo, by courtesy of Ministry of Marine.*

BRENNERO (Societa Esercizi Bacini, Riva Trigoso, 1921). Displacement: 10,600 tons (7,400 tons *d.w.c.*). Length (*p.p.*): 428 feet. Beam: 52·5 feet on *w.l.* and 59 ft. *outside bulges*. Draught: 24·3 feet. Guns: 4—4·7 inch (50 cal.), 2—3 inch AA. Magazines are well protected. I.H.P. 9,500 = 10·5 kts. (for *trials*), 9·5 kts. (in service). Triple expansion engines, 1 screw. Oil fuel only. Special Protection: "Pugliese" type bulges, with central "shock-absorbing" cylinders.

Fuel Ships and Oil Tankers—*continued.*

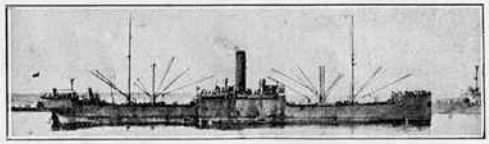
URANO. *Photo added* 1927.

URANO (Deutsche Werke, Kiel, 1922). Oil tanker, built under War Reparations account. Diesel engines. B.H.P. 1,900 = 10 kts. 11,500 tons. Dimensions: 398 × 54 × 23½ feet. Guns: 2—4·7 inch, 2—3 inch AA., 1 M.G. Cargo 8,000 tons.



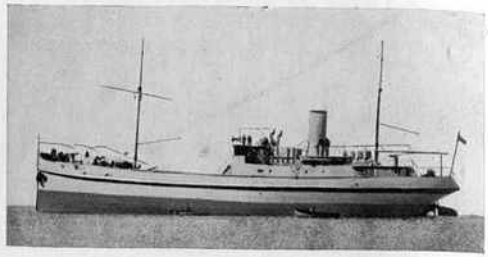
NETTUNO. 1928 *Photo, by courtesy of Ministry of Marine.*

GIOVE, NETTUNO (1916). Oil tankers. 10,310 tons. Dimensions: 416½ × 50¾ × 24 feet. Armament: 3—4·7″, 1—3″ AA. H.P. 3,000 = 10·5 kts. Cargo: 6,000 tons oil fuel.



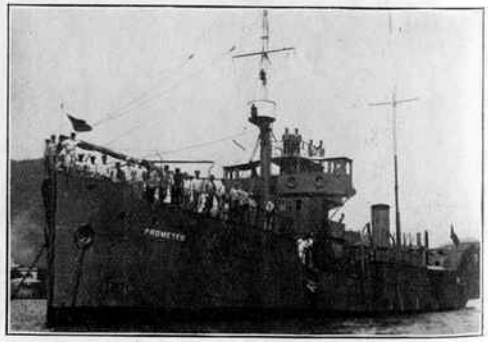
BRONTE (1904). Fleet Collier, Oil Tanker and Transport. 9,460 tons. Complement, 79. Guns: 2—4·7″, 2—3″ AA., 2—3″, 1 M.G. With full cargo, 3,700 I.H.P. = 11·5 kts.; with reduced cargo, 4,300 I.H.P. = 14·5 kts. 2 screws. 4 cyl. boiler. Carries 6,000 tons coal or 4,000 tons oil + 2,000 tons coal. Own coal: 550 tons. *Sterope* (sister ship) lost during War.

Fuel Ships and Oil Tankers—*continued.*



STIGE (1922). Petrol Carrier. **COCITO, LETE.** (1914-15). Oil tankers. 1,204 tons. Fiat Diesel engines. H.P., 400 = 8·5 kts. Cargo: 760 tons.

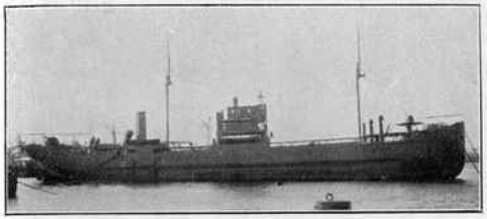
Guns: *Stige* 1—4·7″, 1—3″ AA.
Cocito, *Lete* } 3—2″ AA.



PROMETEO. 1928 *Photo, Pucci.*

PROMETEO (ex-*Ostia*). (1923). 1,080 tons. Speed: 10 kts. Guns: 2—14 pdr. AA.

Water Carriers (*Navi Cisterne per Acqua*).



DALMAZIA. 1929 *Official Photo.*

DALMAZIA (Fiume, 1922), **ISTRIA** (Fiume, 1923). Displacement: 3,000 tons. Speed: 12 kts. Guns: **1**—4.7 inch, **1**—3 inch, AA. Cargo: 1,800 tons. Both built at Quarnaro Yard.

PAGANO, VERDE (1921). 1,490 tons. Fiat Diesel engines. B.H.P. 400 = 8.5 kts. Guns: **1**—4.7 inch, **1**—3 inch, AA. Capacity: 950 tons.

FLEGETONTE (1915). Similar to Oil Tankers of *Cocito* type. 1,200 tons. **3**—3 inch AA. Capacity: 750 tons.

BORMIDA, **MINCIO** } 1930. 655 tons. H.P. 670=9 kts.

ARNO, **BRENTA** } 1929. 644 tons. H.P. 645=9 kts.

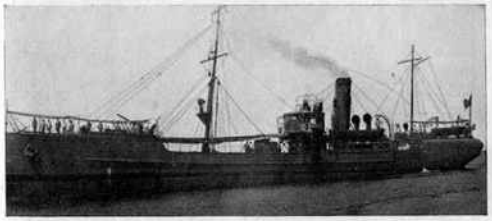
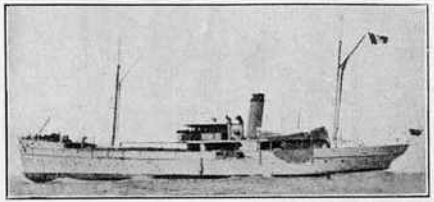


Photo 1930.

ERIDANO (1911). 1,260 tons. Guns: **1**—3 inch AA. Designed H.P., 1,200 = 12.7 kts. 2 screws. 2 Yarrow boilers. Coal: 120 tons Carries 400 tons water.

Water Carriers—*continued.*



TEVERE (1897). 960 tons. Guns: **2**—6 pdr. H.P., 620=11 kts. 1 screw. 2 Thornycroft boilers. Coal: 150 tons. Carries 320 tons water.

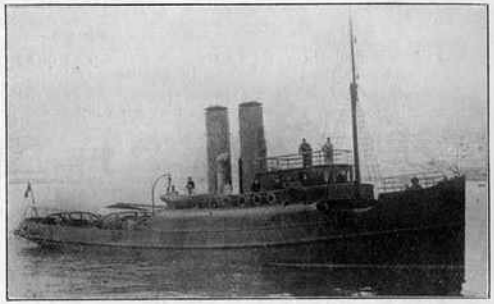
(There are 28 smaller Tanks, besides 7 *building*.)

FRIGIDO (1916). 304 tons. H.P. 221= 9 kts.

1930 *Photo, Capitan M. Mille.*

ADIGE (1929). 793 tons. H.P. 280=8 kts.

Tugs.



L. F. MARSIGLI. 1929 *Official Photo.*

LUIGI FERDINANDO MARSIGLI (ex-*Tremiti*, 1916). 450 tons. Speed: 9 kts. Guns: **1**—M.G.

LUNI (1914). **MARITTIMO** (1915) **EGADI** (1915) } 450 tons. H.P. 970=12 kts. Guns: **1**—14 pdr.

MONTECRISTO (1921). 475 tons. H.P. 500=10 kts. Guns: **1**—14 pdr.

ATLANTE (1928). 460 tons. H.P. 964=11·3 kts. Guns: **1**—14 pdr.

ERCOLE (1928) **AUSONIA** (1920) } 470 tons. H.P. 908=11 kts. Guns: **1**—15 pdr.

LIPARI (1921). 318 tons. H.P. 500=10 kts. Guns: **1**—14 pdr.

JAPAN

Revised, at the Navy Department, Tokyo, by courtesy of H. E. The Minister of Marine, 1933.

Flags.

1 *Standard of H.I.M. the Empress.*—A forked flag with a gold chrysanthemum on a red ground (as sketch for Imperial Standard).

2 *Standard of H.I.H. the Crown Prince.*—As Imperial Standard, but the chrysanthemum is enclosed in a square white border set a little distance within edges of flag.

3 *Imperial Princes and Princesses.*—A square white flag, with red border run round edges of flag and gold chrysanthemum in centre.

4 *Duty Flag.*—As sketch for transport, but *white* stripes over *red* ground.

5 *Repair Ship Flag.*—As transport flag, but with red stripes along upper and lower edges of flag.

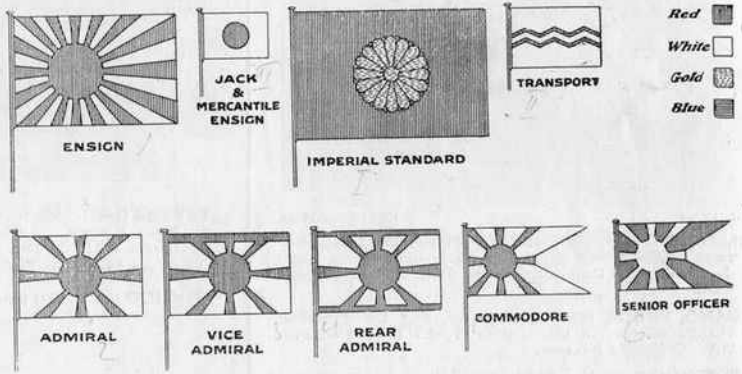
6 *Pendant for Men of War.*—Usual narrow triangulated shape, with Rising Sun next to hoist, as in sketch for Commodore.

Minister of Marine: Admiral Keisuke Okada.

Chief of Naval Staff: Admiral Prince Fushimi.

Naval Attaché, London: Capt. Arata Oka.

Assistant Naval Attaché, London: Commander S. Yano.



Mercantile Marine.

(From "Lloyd's Register," 1933 figures).
2,019 vessels of 4,258,159 gross tonnage.

Navy Estimates.

1931-32, Yen 210,000,000.

Personnel: About 87,000, all ranks.

Personnel and Uniforms.

INSIGNIA OF RANK—EXECUTIVE OFFICERS—SLEEVES. (Changed to this; 1908.)

	Tai-sho.	Chu-sho.	Sho-sho.	Tai-sa.	Chu-sa.	Sho-sa.	Tai-i.	Chu-i.	Sho-i	Has a stripe half the width of a Sho-i.
Executive Branch:										
Corresponding British:	*Admiral*	*Vice-Ad.*	*Rear-Ad.*	*Captain.*	*Commander.*	*Lieut. Com.*	*Lieutenant.*	*Sub-Lieut.*	*Acting Sub-Lieut.*	

BAND between stripes. (BRANCHES, with but after Executive).

Violet	Kikwan (*Engineer*) (with executive rank and curl. Titles as above with the prefix Kikwan).
Red	Gun-i (*Doctor*).
White	Shukei (*Paymaster*).
Brown	Zosen (*Constructor*).
"	Zoki (*Engineer-Constructor*). with curl, as Executive.
Purple-Brown	Zohei (*Gun Constructor*).
Blue	Suiro (*Hydrographer*).

CAP.

The cap is the same as the British (but without gold embroidery in the senior ranks).

CAP BADGE.

Small anchor, surrounded by cherry leaves.

The senior officer of any branch on board the ship always carries the affix "*cho.*" Thus: Ho-jitsu-cho (*Gunnery*), Sui-rai-cho (*Torpedo*), Ko-kai-cho (*Navigator*), Gun-i-cho (*Senior Doctor*), Shukei-cho (*Senior Paymaster*).

Undress is a military tunic (dark blue) with the sleeve insignia of rank in black braid only, with curl, and with collar insignia of rank and branch.

Principal Naval Guns.

Notation.	Calibre.	Length in calibres.	Model.	Weight of Gun.	Weight of A.P. shot.	Maximum Initial Velocity.	Maximum penetration fittings A.P. calculated at K.C. 5000 yards.	Maximum penetration fittings A.P. calculated at K.C. 3000 yards.	Danger space against average ship, at 10,000 yards.	Danger space against average ship, at 5000 yards.	Danger space against average ship, at 3000 yards.	Service rate of Fire. Rounds per minute.
	inches.			tons.	lbs.	F. S.	inches.	inches.				
HEAVY.	16	45	K.M.	105	...	2600	...	...	...	...	...	...
	14	45	V	82	1400	...	...	...	...	...	...	...
MEDIUM.	8	45	A	17½	250	2740	7	10	110	425	600	1·2
	8	40	A	15½	250	2580	5½	7½	100	400	580	1·2
	6	45	('04)	8½	100	3000	4½	6½	75	250	475	...
	6	50	V	8	100	3000	4½	6½	75	250	475	6
	6	40	A	6½	100	2500	3	4½	65	210	435	7
	6	40	A	6	100	2220	2½	4	35	150	360	8
	5·5	50	...	6¼	82	2725	...	...	...	...	...	12
	4·7	45	...	...	...	...	...	...	...	...	...	...
	4·7	40	A	2	45	2150	...	2½	...	...	...	8
	4·7	32	A	1⅞	36	1938	...	...	...	...	...	8-6
LIGHT	3	...	...	...	14	...	...	...	...	...	...	...
	3	40	...	2	12	2200	...	...	...	...	...	...
AA	3	40	...	...	13	...	...	...	...	...	...	...

In the Model column A = Armstrong; O = Obukhoff (Russian); V = Vickers.
K.M. = Kure Arsenal and Muroran Steel Works.

16 inch, 45 cal. in *Nagato* and *Mutsu*.
14 inch, 45 cal. *Fuso* class (2), *Kongo* class (4); in *Ise* class (2).
8 inch, of a new model in cruisers of *Nachi*, *Kinugasa*, and *Kako* classes.
6 inch, 50 cal. in *Fuso* class (2), *Kongo* class (4).
6 inch, 40-45 cal. in 1st and 2nd Class Cruisers, &c.
5·5 inch in *Nagato* class (2), *Ise* class (2), *Tatsuta* class (2), *Kuma* class (13).

(All details tabulated above are unofficial.)

Gunnery Notes.

Heavy and Light Marks of Directors have been perfected, both of which are being mounted in Capital Ships in service. Type of Directors in Light Cruisers unknown. Nothing known of the system used; there is only a vague report of doubtful accuracy that the Japanese Director is "intermediate between the German Navy and 'Petravic' systems." They are mounted in towers, like British Navy, i.e., in Capital Ships Main Director Tower at masthead, Light Directors on bridges, or legs of tripod masts.

Range-finders.—Barr & Stroud is used. In Capital Ships, large-base R.F. are mounted on turret roofs, as in British Navy.

General efficiency and accuracy of Fire Control system in latest ships believed up to standard of British and U.S. Navies.

Torpedoes.

21 inch, said to be a Japanese modified Whitehead heater type; effective range, 10,000 yards. Is said to be powerful and very accurate in running and depth-keeping. A specially heavy mark may be used for tubes of Battleships.

A special 18 or 21 inch mark of short range and heavy charge is said to be built for Submarines; also a short-range (2000 yards) mark for torpedo-dropping 'planes.

Output.—Kure Arsenal, Muroran Iron Works and Osaka Iron Works produced 320 torpedoes per annum during the War. Kobé Steel Works said to have produced 250 torpedoes during 1920. Present capacity (excluding torpedoes ordered from Messrs. Whiteheads, Weymouth), probably over 600 torpedoes per year. Mitsu Bishi Zo K. and Kawasaki Co. probably manufacture torpedoes. Five private establishments are known to be engaged in this work.

Ships to be built under Fleet Replenishment Law 1931-38

		Builders.
4 *Cruisers.*	8500 tons. 6 inch guns.	1 each Mitsubishi (Nagasaki), and Kawasaki D.Y., 2 at Naval Yards.
12 *Destroyers.*	1400 tons.	2 Yokohama D. Co. Rest at Naval Yards.
1 *Submarine.*	1970 tons.	Kawasaki D.Y. (Kobe).
6 *Submarines.*	1300 tons.	2 Mitsubishi (Kobe), 4 Navy Yards.
2 *Submarines.*	900 tons.	Navy Yards.
1 *Minelayer.*	5000 tons.	Asano D.Y. Co.
3 *Minelayers.*	600 tons.	1 Fujinagata Co., 2 Uraga D. Co.
6 *Minesweepers.*	600 tons.	2 each Mitsui Z. and Harina Z., 1 Osaka I.W.

Naval Air Force is to be triple present day strength.

Second Replenishment Law, 1933

A further sum of 670,000,000 yen (£67,000,000) has been asked for to be spread over a period of four years to cover the cost of building the following vessels in addition to those listed above:—

2 cruisers of 8,500 tons	6 submarines
2 carriers of 10,000 tons	4 chasers
1 minelayer	1 submarine parent ship
14 destroyers	1 repair ship
4 torpedo boats	1 tanker

In addition a sum of £7,500,000 is asked for to cover the re-construction of the *Nagato*, *Mutsu*, *Akagi* and *Kaga* and two cruisers which will bring the total for next year's naval budget (if approved) up to £124,000,000.

The Second Replenishment Law also includes the strengthening of the Air Force (naval) by a further 8 squadrons between 1934–38 giving a total of 31 squadrons in 1938.

NOMENCLATURE OF JAPANESE WARSHIPS.

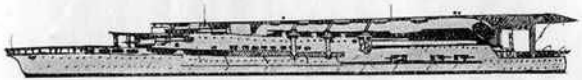
The system of nomenclature now being used is thus:—
Battleships, and Aircraft Carriers: Named after Provinces and Mountains.
Cruisers: Named after Rivers and Towns.
Destroyers (First Class): Named after Winds.
Destroyers (Second Class): Named after Trees, Flowers and Fruits.

SUMMARY OF NAVAL FORCES.

	Building	Under age	Over age
9 *Battleships.*			
Nagato *class*	—	2	—
Hyuga ,,	—	2	—
Fuso ,,	—	2	—
Kongo ,,	—	3	—
4 *Aircraft Carriers.*			
Ryujo *class*	—	1	—
Kaga ,,	—	1	—
Akagi ,,	—	1	—
Hosho ,,	—	1	—
To be built	2	—	—
12 *Large Cruisers.*			
Maya *class*	—	4	—
Nachi ,,	—	4	—
Kako	—	2	—
Aoba	—	2	—
24 *Cruisers.*			
Mogami	4	—	—
Yubari	—	1	—
Sendai	—	3	—
Natori	—	6	—
Kuma	—	5	—
Tenryu	—	2	—
Chikuma	—	—	2
Tsushima	—	—	1
7 *Old Armoured Cruisers.*			
Nisshin	—	—	2
Iwate	—	—	2
Yakumo	—	—	1
Adzuma	—	—	1
Asama	—	—	1
107 *Destroyers.*			
1st class — Ariake	5	1	—
1st class — Fubuki	—	24	—
1st class — Mutsuki	—	12	—
1st class — Kamikaze	—	9	—
1st class — Minekaze	—	9	6
1st class — Tanikaze	—	—	2
1st class — Urakaze	—	—	1
1st class — Amatsukaze	—	—	4
2nd Class — Wakatake	—	7	—
2nd Class — Kaya	—	10	9
2nd Class — Momo	—	—	8

	Building	Under age	Over age
4 *Torpedo Boats.*			
Chidori *class*	4	—	—
2 *S/m. Chasers.*	2	—	—
12 *Mine Sweepers*			
Nos. 13, 14	2	—	—
Nos. 7, 8	—	—	2
Nos. 9, 10	—	—	2
Nos. 1—6	—	6	—
69 *Submarines.*			
1st Class — New Programme	5	—	—
1st Class — I 1—67	—	26	—
2nd Class — New Programme	2	—	—
2nd Class — RO 14—68	—	36	—
2 *Aircraft Tenders.*			
Notoro	—	1	—
Kamoi	—	1	—
20 *Minelayers.*			
Ento	3	—	—
Yaeyama	—	1	—
Itsukushima	—	1	—
Tokiwa	—	1	—
Katsuriki	—	1	—
Kurakami *class*	—	12	—
Un-named	—	1	—
14 *Gunboats*			
Yodo	—	1	—
Ataka	—	1	—
Uji	—	1	—
Saga	—	1	—
Atami *class*	—	2	—
Hira ,,	—	4	—
Toba	—	1	—
Fushimi	—	1	—
Sumida	—	1	—
Kotaka	—	1	—
3 *Net layers*			
Shirataka	—	1	—
Kamome *class*	—	2	—
5 *Depot Ships*	1	4	—
11 *Oilers*	—	11	—
7 *Other Auxiliaries*	—	8	—

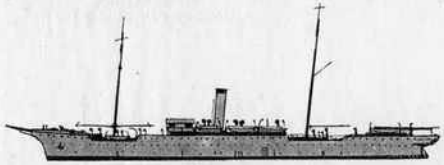
DISTRIBUTION OF NAVAL FORCES.



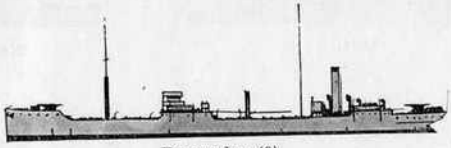
KAGA.

HOSHO.
(Aircraft Carrier.)

AKAGI.
(Aircraft Carrier.)



KARASAKI.
(Torpedo Depot Ship.)

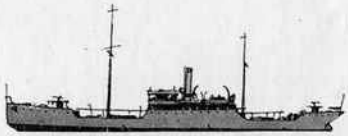


ERIMO *class* (9).
(Shiretoko has tripod main mast.)

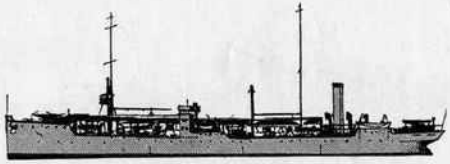
RYUJO.

SUNOSAKI.
(Oiler.)

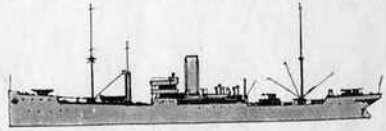
SEITO.
(Store Ship.)



KOSHU.
(Surveying Ship.)

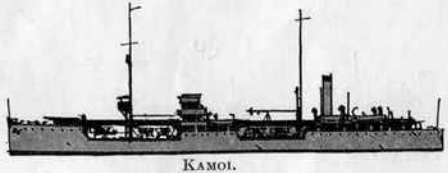


NOTORO.
(Aircraft Tender.)



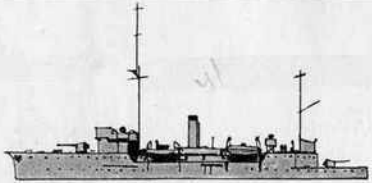
MAMIYA.
(Supply Ship.)

NOSHIMA. MUROTO.
(Colliers.)



KAMOI.
(Aircraft Tender.)

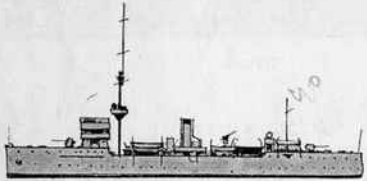
SHIRATAKA.



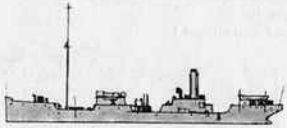
SAGA.

KUROSAKI *class* (12).
(*Mine Layers.*)

KOMAHASHI.
(*Destroyer Depôt Ship.*)

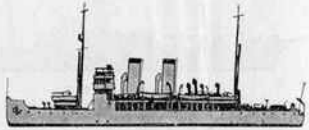


ATAKA.



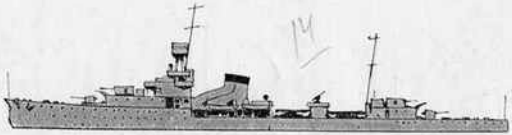
TSURUGIZAKI. (*Oiler.*)

KATSURIKI (*Mine Layer.*)

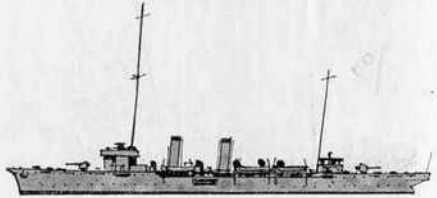


OTOMARI. (*Ice Breaker.*)

ITSUKUSHIMA.



YUBARI.

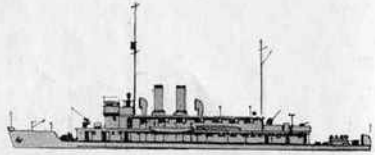


YODO.

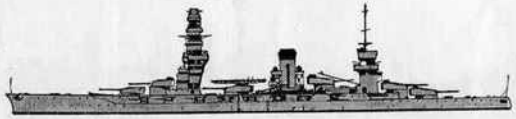
KAMOME. TSUBAME

YAEYAMA.

ATAMI. FUTAMI.



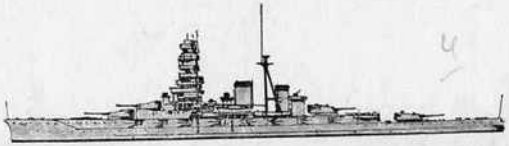
HIRA. HODZU.
SETA. KATATA.



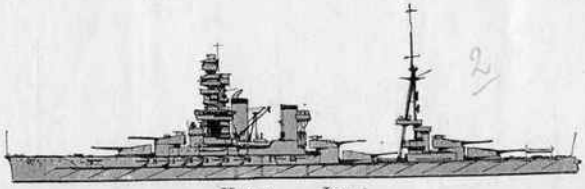
FUSO. YAMASHIRO.

NAGATO. MUTSU.

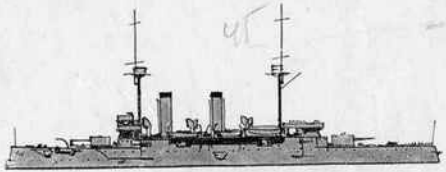
HI YEI.



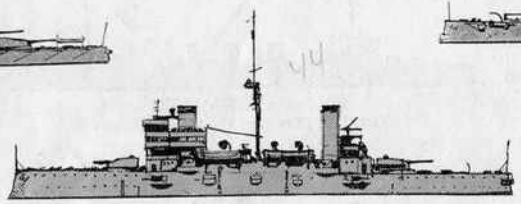
HARUNA. KONGO. KIRISHIMA.



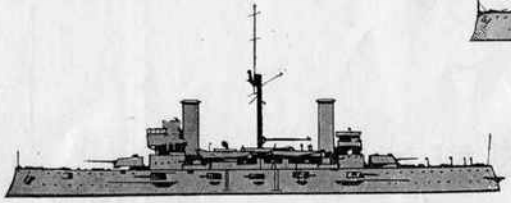
HIUGA. ISE.



ASAMA. TOKIWA.



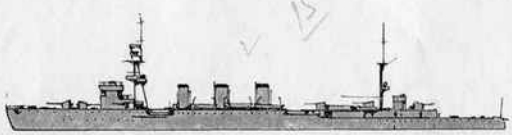
KASUGA.



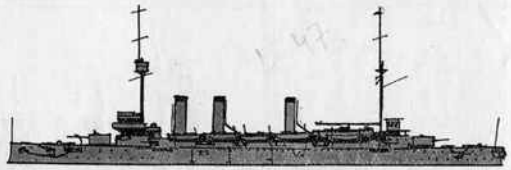
NISSHIN.

JINGEI. CHOGEI.

NACHI. ASHIGARA.
MYOKO. HAGURO.



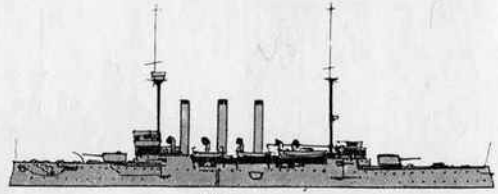
KUMA. TAMA. OHI.
KISO. KITAKAMI.



ADZUMA.

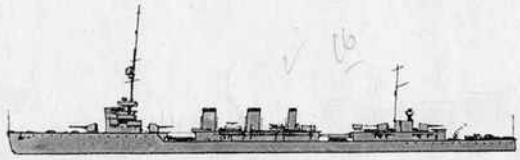
KINUGASA.
AOBA.

ISUDZU. NATORI. KINU.
NAGARA. YURA. ABUKUMA.

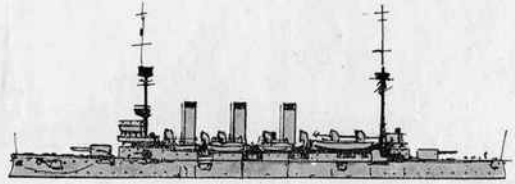


IDZUMO.
IWATE.

FURUTAKA.
KAKO.

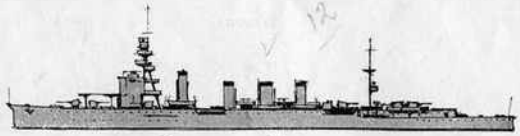


TATSUTA.
TENRYU. (Now fitted with Tripod foremast.)

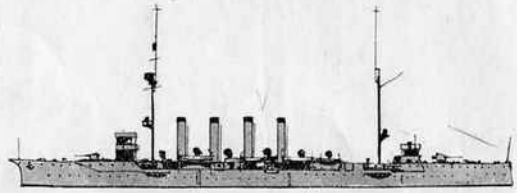


YAKUMO.

ATAGO. MAYA.
CHOKAI. TAKAO.

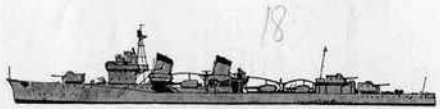


NAKA. JINTSU.
SENDAI (Spoon bow).



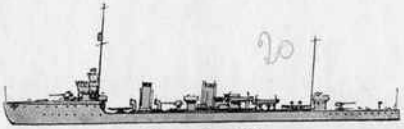
HIRADO. YAHAGI.

Minesweepers Nos. 1—6

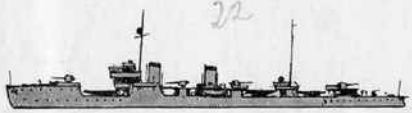


FUBUKI *class* (20).
(Some have no shields to tubes.)

HIBIKI *class* (4).



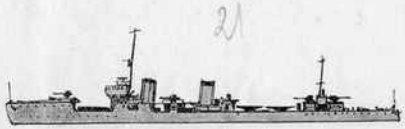
MOMO *class* (8).



MINEKAZE *class* (15).

AMATSUKAZE *class* (4).

URAKAZE.



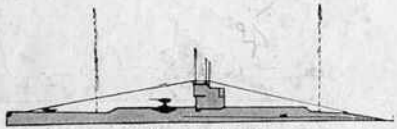
KAMIKAZE *class* (9).
(Note main mast and after guns.)

TANIKAZE. KAWAKAZE.

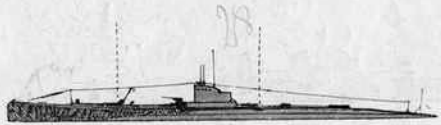
KAYA *class* (19).

MUTSUKI *class* (12).
(Note bow and amidships t.t.)

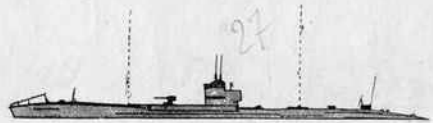
MINESWEEPERS NOS. 7—8.



Ro. 51—56 (5)



I. 51.

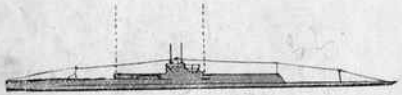


I. 21—24.

Ro. 1—5.

Ro. 29.—32.

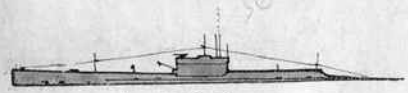
I 52.



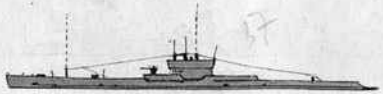
Ro. 14—25 (12).

Ro. 26. 27. 28.

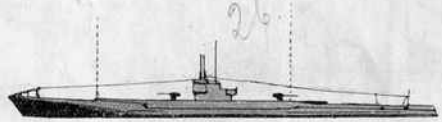
I. 53—58.
(Deck flush from bow to C.T.).



Ro. 57. 58. 59.



Ro. 60—68.



I. 1—5.

(Nagato Class—2 Ships).

とがな NAGATO (Nov. 9th, 1919).

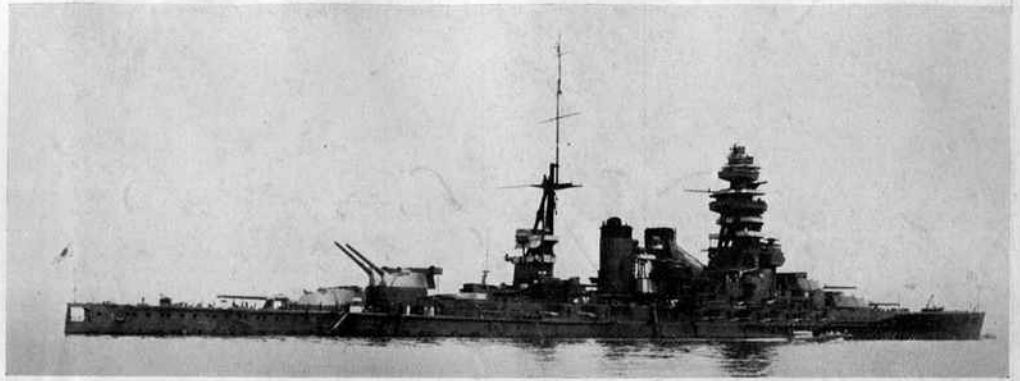
つむ MUTSU (May 31st, 1920).

Standard displacement, 32,720 tons.

Complement, { 74 officers / 1,258 men } = 1,332.

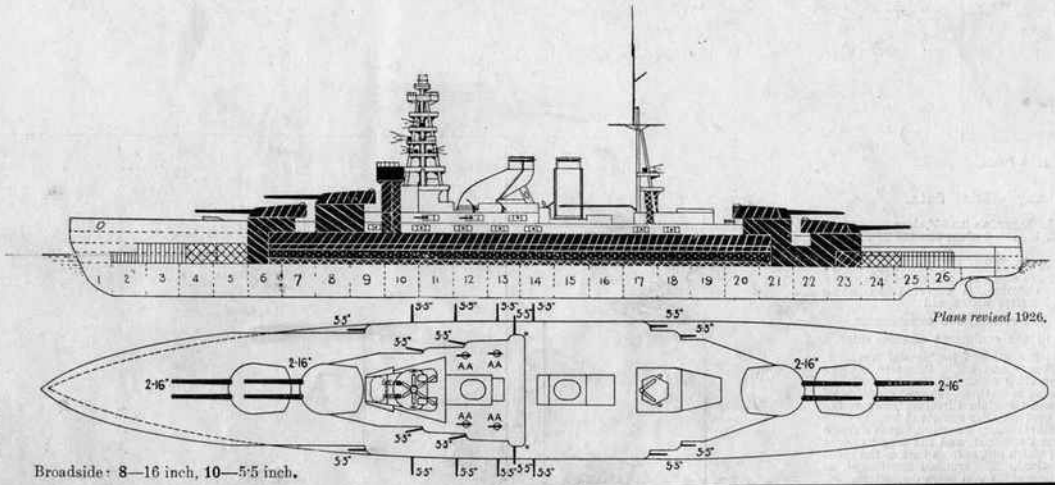
Length, { 660′ 7″ *p.p.* / 700′ 0″ *o.a.** } Beam, 95 feet. Draught, 30 feet *max.*

* Approximate.



Nagato (Catapult not yet fitted). 1933 *Photo.*

Guns (Japanese):
8—16 inch, 45 cal. } **Dir. Con.**
20—5·5 inch, 50 cal. }
4—7 inch (13 pdr.) 40 cal. AA.
4 M.G.
4 Landing.
Torpedo tubes (21 inch):
4 *above water.*
4 *submerged.*
Searchlights: 10.



Plans revised 1926.

Armour: *(unofficial)**
13″ *or* 12″ Belt .....
8″—4″ Ends .....
3½″ Deck .....
7″ deck above magazines, boilers and engine rooms.
14″ Turrets .....
″ Battery .....
12″ Conning tower .....
(Special anti-torpedo protection.)

* See notes on next page.

Ahead:
4—16 inch.
6 to 8—5·5 inch.

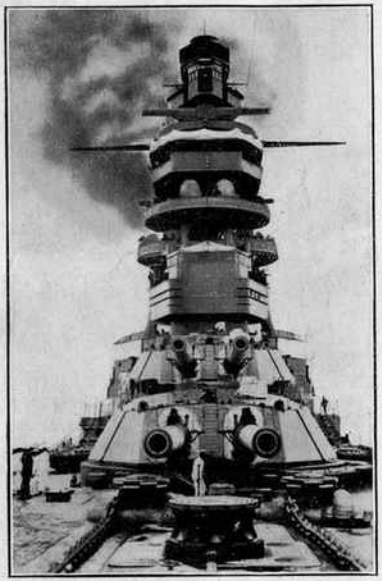
Broadside: 8—16 inch, 10—5·5 inch.

Astern:
4—16 inch.
4—5·5 inch.

Machinery: Geared turbines. Screws. Boilers: 12 Kampon. Designed H.P. 46,000 = 23 kts.
Fuel: (coal and oil) *normal* ? tons, *maximum* over 5,000 tons.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*	*1st Period ends*
Nagato	Kure D.Y.	Kure D.Y.	28 Aug., 1917	25 Nov., 1920	48,000 = 23·5	Kampon	1928
Mutsu	Yokosuka D.Y.	Yokosuka D.Y.	1 June, 1918	24 Oct., 1921	= 23·4	Kampon	1929

Illustrations for "Mutsu" class.



NAGATO. 1928 *Photo.*

These Notes are not from any official data.

Gunnery Notes.—16 inch guns can range up to 35,000 yards with 35° elevation. Arcs of fire: *about* 270-300° for Turrets Nos. 1, 2, 4. No. 3 *about* 320-330°. 5.5 inch guns *about* 120-130°.

Armour and Protection Notes.—General scheme of armouring is believed to be akin to that for H.M.S. *Queen Elizabeth*. Protective decks are thickened in vicinity of magazines. Special protection below waterline is reported to be a "modified form of bulge" which does not interfere with speed.

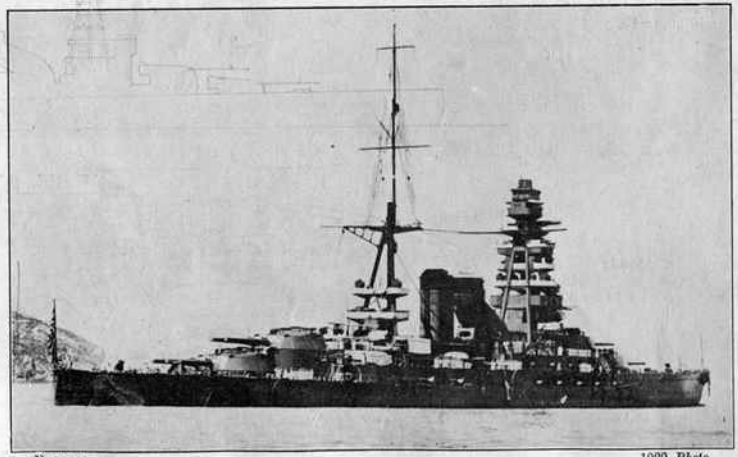
Searchlights.—Ten 30 inch, distributed as eight to foremast, two to mainmast.

Aircraft Notes.—Three planes have been added to the equipment of these ships.

Appearance Notes.—The outstanding feature is the colossal heptapodal foremast, with its numerous tops and bridges, for Heavy and Light Directors, Range-Finders and Searchlights. Two of its supporting legs rake forward, two aft, and one out to each beam. The central trunk is so thick, it accommodates an electric lift, running between Upper Deck and the Main Director Tower at the masthead. This mast is said to have been evolved after many experiments had been made to determine the most rigid and vibrationless structure. It is claimed to be almost indestructible by shell-fire, but its weight, and the target offered must be enormous. The shape of the stem, which differs from that of the usual Japanese "yacht" bow, should also be noticed. The trunked fore-funnel, as fitted 1924-25, renders the appearance of these ships still more distinctive.

General Notes.—*Nagato* provided for by 1916 Programme, and laid down in dry dock at Kure D.Y. during the summer of 1917, floated out Nov. 9th, 1919. *Mutsu* provided for by 1917 Programme: estimated cost is about eight million pounds for *Mutsu*. Plans for this type were completed during the spring of 1916, and the Japanese claim that the design ante-dates the U.S.S. *Maryland* class (with same main armament) by four months. As the first battleship in the world to be completed with 16 inch guns, she is said to be a most successful ship in all respects. Her design and construction certainly reflect the highest credit on her authors and builders.

MUTSU (Catapult forward of "X" Turret). 1933 *Photo.*



NAGATO. 1929 *Photo.*

1915 BATTLESHIPS.

伊勢 ISE (Nov., 1916),

日向 HIUGA (Jan., 1917).

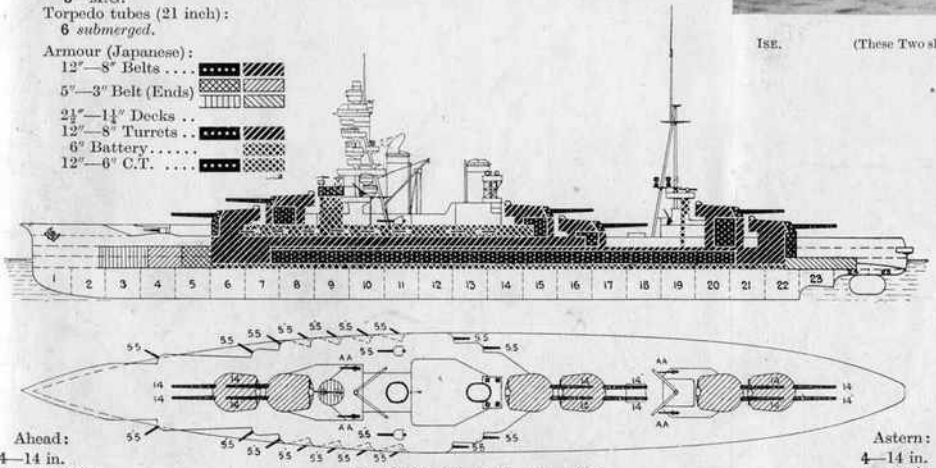
Standard Displacement, 29,900 tons. Complement, 1,360.

Length (*p.p.*). 640 feet. Beam, 94 feet. *Max.* draught, 28¾ feet. Length (*o.a.*), 683 feet.

Guns (Japanese):
12—14 inch, 45 cal. } Dir.
20—5·5 inch, 50 cal. } Con.
4—3 inch, (13 pdr.) 40 cal. AA.
3—M.G.

Torpedo tubes (21 inch):
6 *submerged*.

Armour (Japanese):
12″—8″ Belts ....
5″—3″ Belt (Ends)
2½″—1½″ Decks ..
12″—8″ Turrets ..
6″ Battery.....
12″—6″ C.T. ....



Ahead:
4—14 in.
6 to 8—5·5 in.

Broadside: 12—14 in., 10—5·5 in.

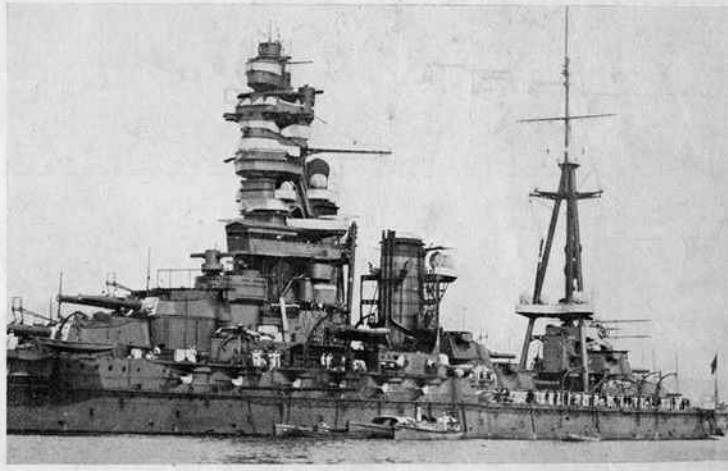
Astern:
4—14 in.
6—5·5 in.

Machinery: Brown-Curtis turbines in *Ise*; Parsons turbines in *Hiuga*. 4 screws. Boilers: 24 Kansei.* Designed H.P. 45,000 = 23 kts. Fuel: *normal* 1000 tons; *maximum* 4000 tons coal +1000 tons oil.

*General Note concerning boilers of these and certain other ships: "Kansei-Hombu" is a Japanese Admiralty type of W.T. boiler, resembling Yarrow type, with Japanese modifications.

Name	*Built by*	*Machinery*	*Laid down*	*Completed*	*Trials. H.P. = kts.*	*1st Period ended*
Ise	Kawasaki Co.	Kawasaki Co.	May '15	Dec. '17	= 23·3.	1925
Hiuga	Mitsu Bishi Co.	Mitsu Bishi Co.	May '15	Apr. '18		1926

ISE. (These Two ships are to be re-constructed and appearance is likely to be considerably altered as in the case of *Fuso*) 1930



ISE. (Detail view). 1932 *Photo.*

General Notes.—Built under the 1914 Naval Programme. These ships are an improved and slightly faster *Fuso* type. It is unofficially reported that they are strongly protected against aerial attack by three specially thick protective decks over vital parts of the hull. Special attention is reported to have been paid to the rapid replenishment of fuel, stores, ammunition, &c. Usual internal protection against mine and torpedo explosions by minute sub-division wing bulkheads over machinery and magazine spaces. 10—30 inch searchlights, two on foremast, four on funnel, four on mainmast. Reconstructed 1926-27, additional tops being fitted. *Ise* fitted with searchlight positions similar to *Hiuga* in 1930.

Gunnery Note.—Maximum elevation of 14 inch guns reported to be 25°.—(Unofficial).

Aircraft Note.—Three planes added to equipment, 1927.

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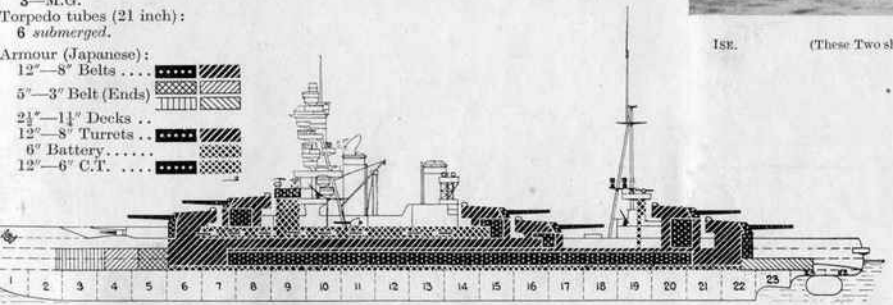
4—3 inch, (13 pdr.) 40 cal. AA.
3—M.G.

Torpedo tubes (21 inch):
6 *submerged*.

Armour (Japanese):
12"—8" Belts ....
5"—3" Belt (Ends)
2½"—1½" Decks ..
12"—8" Turrets ..
6" Battery.....
12"—6" C.T. ....



ad:
in.
—5·5 in.

Astern:
4—14 in.
6—5·5 in.

Broadside: 12—14 in., 10—5·5 in.

Machinery: Brown-Curtis turbines in *Ise*; Parsons turbines in *Hiuga*. 4 screws. Boilers: 24 Kansei.* Designed H.P. 45,000 = 23 kts. Fuel: *normal* 1000 tons; *maximum* 4000 tons coal + 1000 tons oil.

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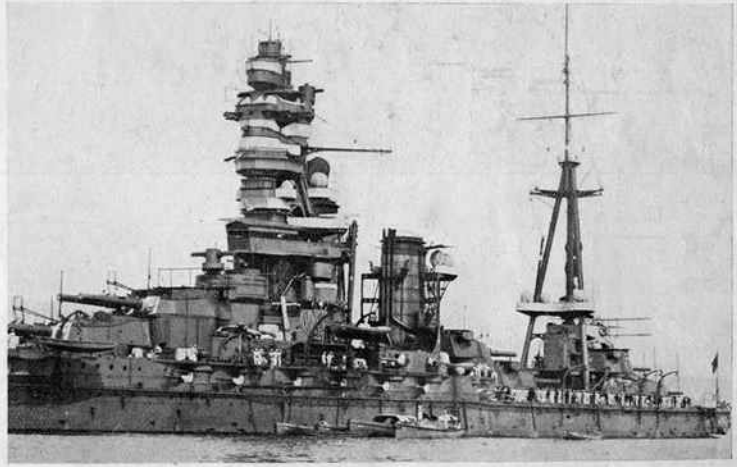

ISE. (Detail view). 1932 *Photo.*

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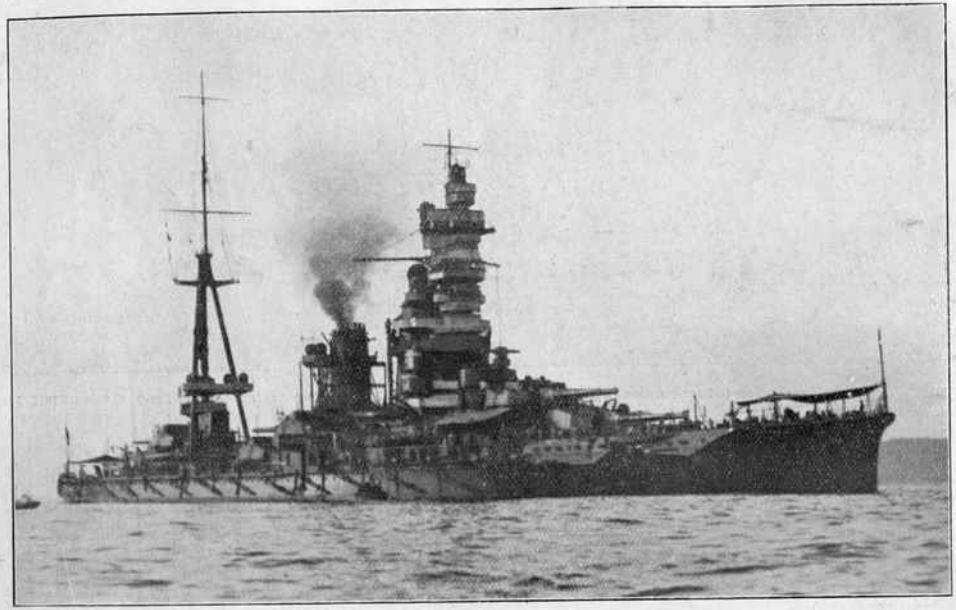
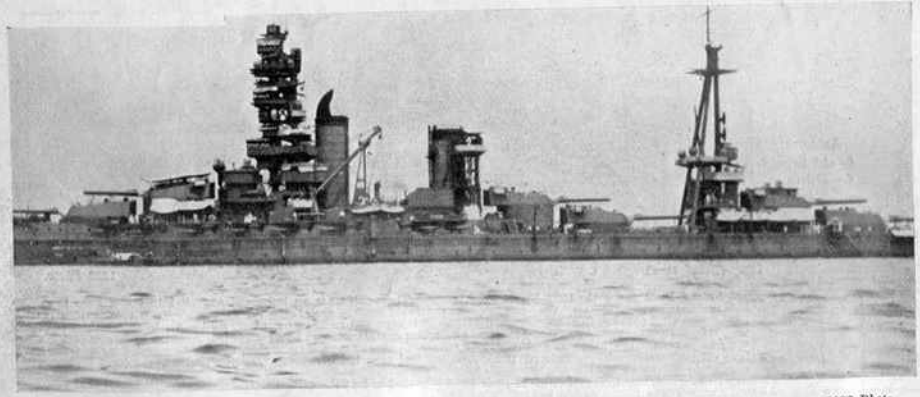
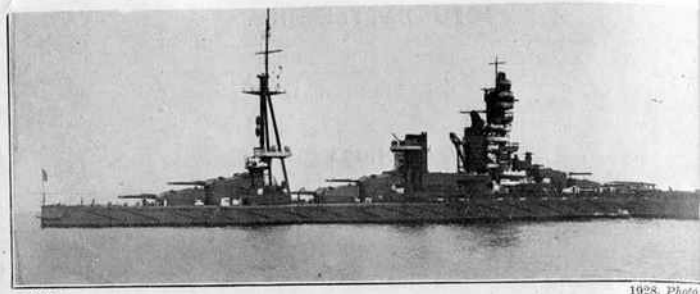
Gunnery Note.—Maximum elevation of 14 inch guns reported to be 25°.—(Unofficial).
Aircraft Note.—Three planes added to equipment, 1927.



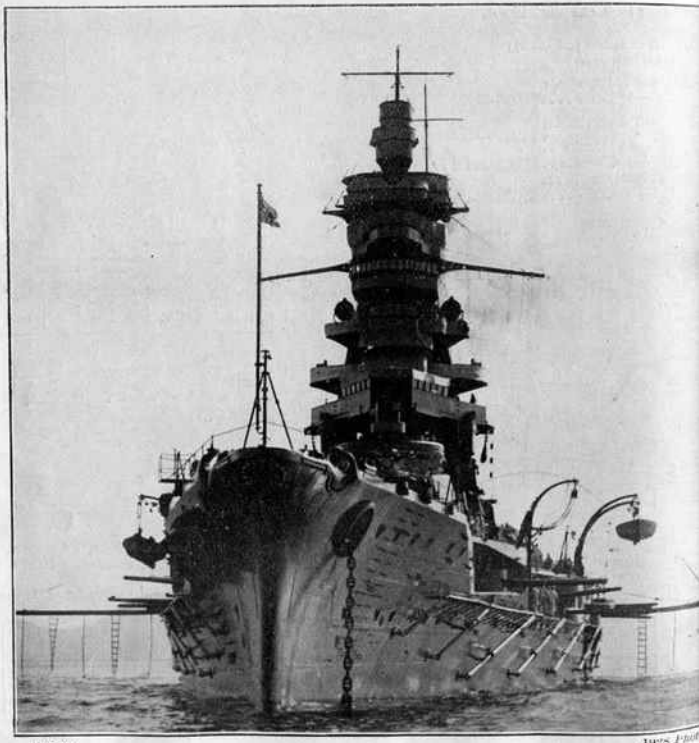
HYUGA. 1929 *Photo.*



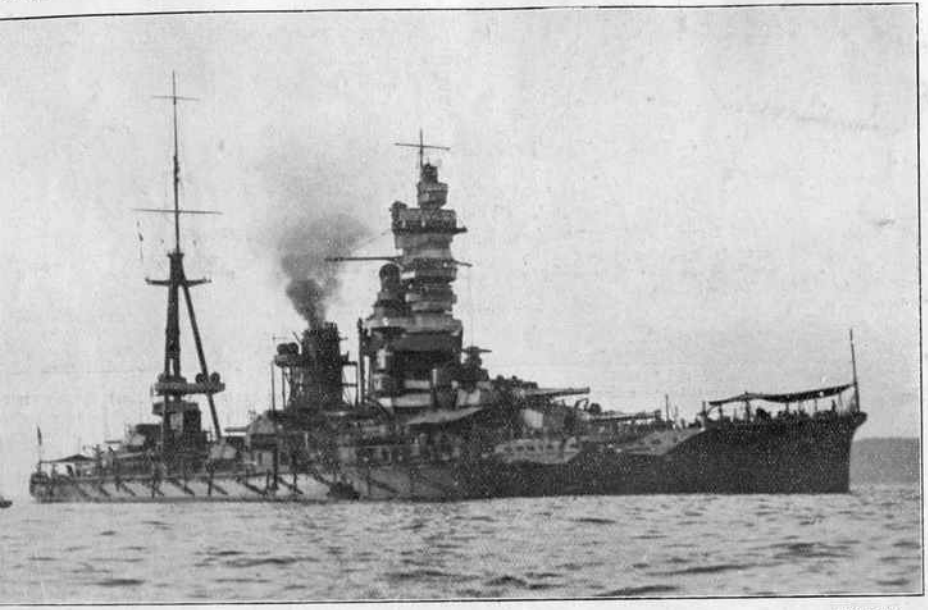
ISE. (After refit 1930.) 1930 *Photo.*



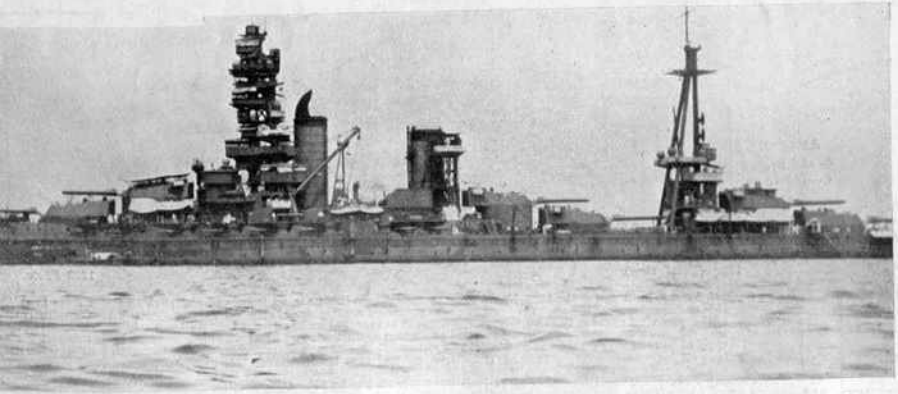
HYUGA. 1928, *Photo.*



HYUGA. 1928 *Photo.*

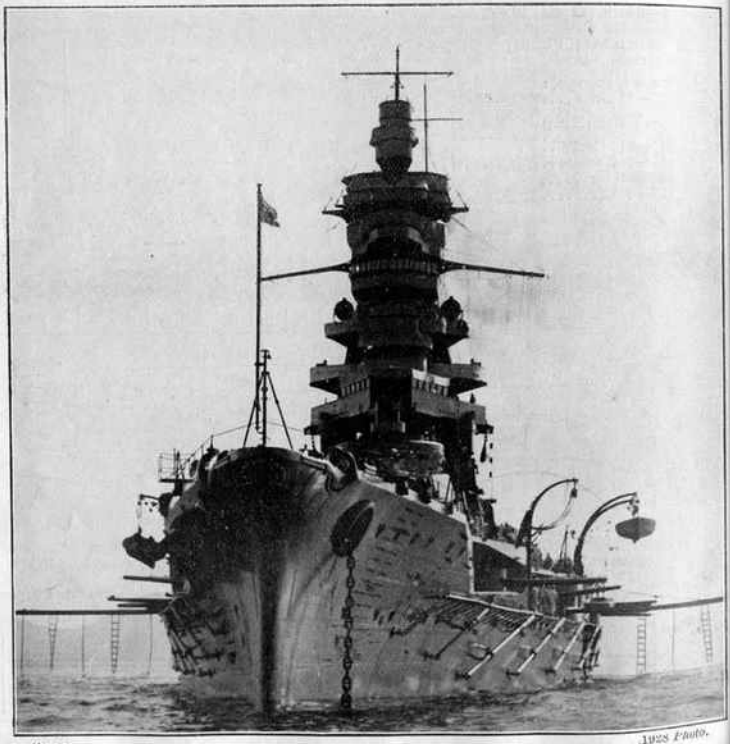


HIUGA. 1929 *Photo.*



ISE. (After refit 1930.) 1930 *Photo.*

HIUGA. 1928, *Photo.*



HIUGA. 1928 *Photo.*

ふそう FUSO (March, 1914),

やましろ YAMASHIRO (Nov., 1915).

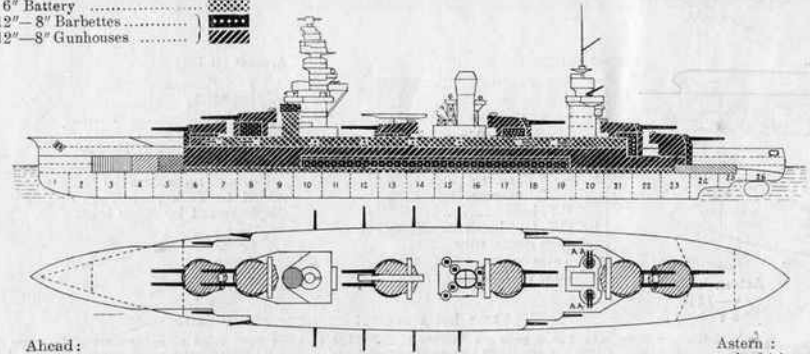
Standard Displacement, 29,330 tons.
Complement, 1243 and 1272.

Length { (*p.p.*) 630 feet. / (*o.a.*) 673 feet. } Beam, 94 feet. *Max.* draught, 28½ feet.

Guns (Japanese):
12—14 inch, 45 cal. } **Dir. Con.**
16—6 inch, 50 cal. }
4—3 inch (13 pdr.), 40 cal., AA.
4 machine.
4 landing.
Torpedo tubes (21 inch):
6 *submerged.*

Armour—*continued.*
12″ & 6″ C.T. .....
(Bulkheads 12″ to 4″)
2″ & 1½″ Decks .....
—″ Roofs { Gunhouses / C.T. ..... }
Searchlights: 10—30 inch.

Armour:
12″–8″ Belt (amidships)
5″, 4½″, 4″ Belt (bow)
4″ Belt (stern) .....
8″ Upper belt .....
6″ Battery .....
12″—8″ Barbettes .....
12″—8″ Gunhouses .....



Ahead:
4—14 in.
4—6 in.

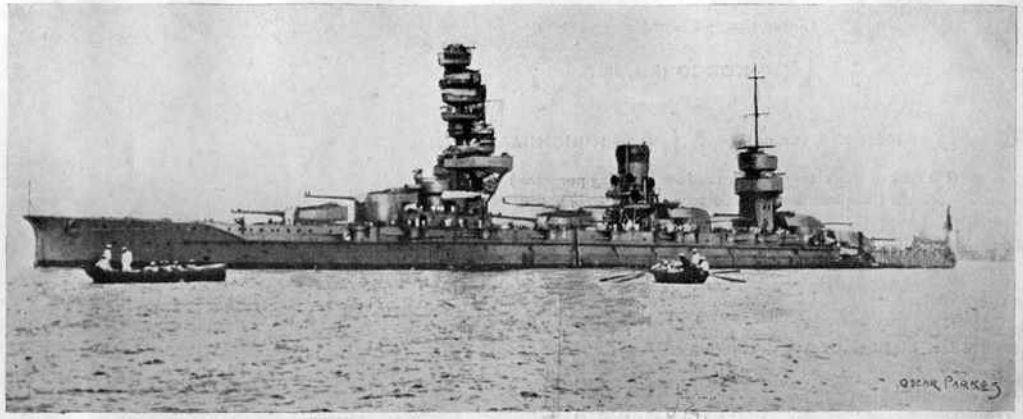
Broadside: **12**—14 in., **8**—6 in.

Astern:
4—14 in.
4—6 in.

Machinery: Brown-Curtis turbines. 4 screws. Boilers: Kampon. Designed H.P. 40,000 = 22·5 kts. Fuel: *normal* 1000 tons, *maximum* 4000 tons coal + 1000 tons oil fuel.

General Notes.—Both ships were thoroughly reconstructed 1932-33 and altered in profile. The replacing of the 24 Miyabara boilers by (?) 8 Kampon has enabled the forward boiler room to be converted to other uses, and there is now only one funnel fitted with an anti-flare top. The base of the foremast has been enlarged and fitted with wings, and the tripod mainmast is replaced by a tower base on which AA guns are mounted. No. 3 turret now bears forward instead of aft and has a catapult on the crown, while additional searchlights have been grouped around the funnel. A large amount of additional armour and anti-torpedo structure has been worked into the ships, but details are lacking. Formerly the 14″ guns were reported as having an elevation of 25°, but this has probably now been increased.

Name.	*Builder.*	*Machinery.*	*Laid down*	*Completed*	*Trials.* H.P. = kts.	*Turbine*	*Boilers*	*Best recent speed*
Fuso	Kure	Kawasaki	Mar.'12	Nov.'15	46,500 = 23.	Curtis	Miyabara	
Yamashiro	Yokosuka	Kawasaki	Dec.'13	Apl.,'17	... ...	Curtis	Miyabara	



1933 *Drawing, Oscar Parkes.*

Fuso. 1933 *Photo.*

(Kongo Class—3 Ships.)

うがんこ KONGO (May, 1912),

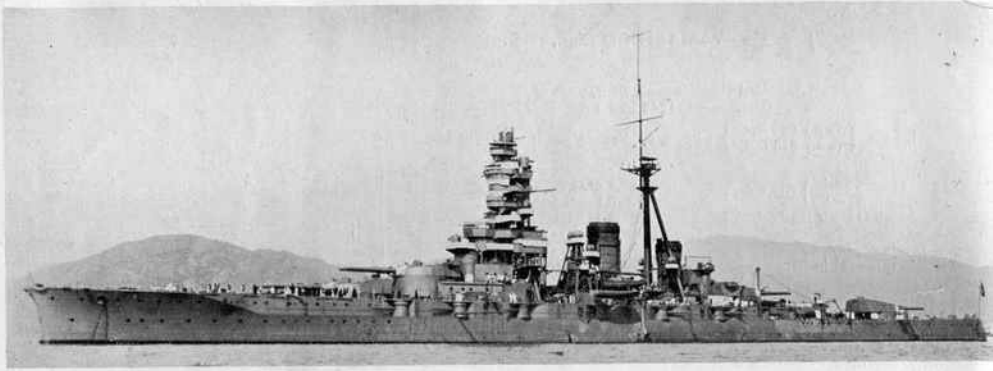
なるは HARUNA (Dec., 1913), まりきし KIRISHIMA (Dec., 1913).

(**HIYEI** of this class de-militarised for Training purposes.)

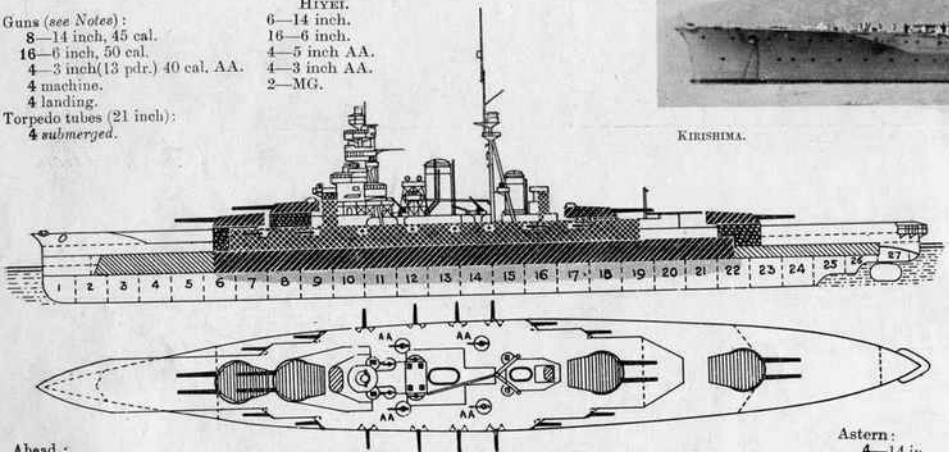
Standard displacement, 29,330 tons. Complement, 980.

Length (*o.a.*) 704 feet.	*Kirishima:*	Beam, 92½ feet.		*Max.* draught, 27 feet.			
	Kongo	,, 92	,,	,,	,,	27¼	,,
	Haruna	,, 95	,,	,,	,,	27½	,,

Guns (*see Notes*):	Hiyei.
8—14 inch, 45 cal.	6—14 inch.
16—6 inch, 50 cal.	16—6 inch.
4—3 inch(13 pdr.) 40 cal. AA.	4—5 inch AA.
4 machine.	4—3 inch AA.
4 landing.	2—MG.
Torpedo tubes (21 inch):	
4 *submerged*.	



Kirishima. *Photo* 1933.



Ahead:
4—14 in.
2 to 4—6 in.

Broadside: 8—14 in., 8—6 in.,

Astern:
4—14 in.
2 to 4—6 in.

Armour (Krupp):

Vertical:
- 8″ Belt (amidships) .....
- 3″ Belt (ends) .....
- 6″ Upper belt .....
- 6″ Battery .....
- 9″, 6″, 5″ Bulkheads (*f*)
- 8″, 6″ Bulkheads (*aft.*)
- 10″— ″ Barbettes .....
- 9″— ″Gunhouses .....
- ..″ C.T. base ....
- 10″ C.T. (″ hood) .....
- ″ Fore comm. tube ..
- 6″ Torpedo con. tower
- ″ Tube (C.T. tower) ...

Armour (H.T.?):

Decks.
- ″ Forecastle .....
- 2¾″ Main .....
- ″ Middle .....
- ″ Lower .....

Special Protection H.T.
Torpedo Protection Bulkheads.

During reconstruction 4″ was added to deck protection, raising displacement by 3,000 tons.

Machinery: Parsons 4-shaft (in *Haruna* only Curtis 4-shaft) turbines. Designed H.P. 64,000 = 26 kts.
Boilers: See *Notes*. Fuel: About 4,500 tons oil.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials* F.P.	*Turbine*	*Boilers*	*Re-fit*	*1st Period ended*
Kongo	Vickers	Vickers	Jan.'11	Aug.'13		Parsons	Kampon	1925	1921
Haruna	Kawasaki	Kawasaki	Mar.'12	Mar.'15		Curtis	Kampon	1926	1923
Kirishima	Mitsu Bishi	Mitsu Bishi	Mar.'12	Apr.'15		Parsons		1925	1923

These Notes are not from any official data.

Gunnery Notes.—In *Kongo* guns are Vickers models; but in other three ships all calibres are of Japanese manufacture. *Kongo* has combined Vickers (hydraulic) and Janney-Williams (electric) manœuvring systems for her barbettes; there is also a small auxiliary hydraulic installation, generally used for cleaning purposes, which can be used in emergency for working the 14-inch guns. Maximum elevation of 14 inch guns, 18°.

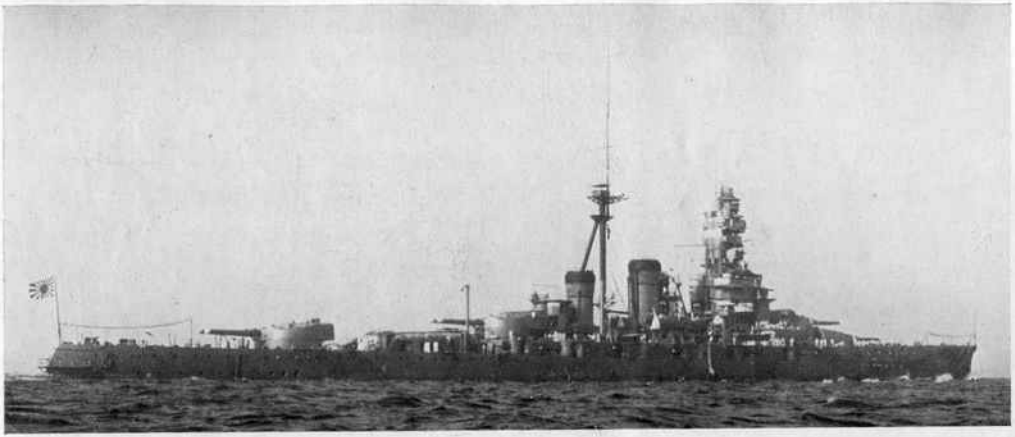
Armour Notes.—Main belt is 12′ 5″ deep, 8″ thick, and extends between Barbettes Nos. 1 and 4. Upper belt between Barbettes Nos. 1 and 3, 6″ thick, and carried up to forecastle deck. Bulkheads: Main belt is closed by diagonal bulkheads of 8″—6″ aft and by a 6″—5″ bulkhead forward. Upper belt closed by 6″ bulkhead aft and 9″—6″ bulkhead forward. There is also a narrow 3 inch strip of armour, 2 feet 6 inch deep under whole length of main belt: this is not shown on plans.

Anti-Torpedo Protection Notes.—Internal sub-division by longitudinal and cross bulkheads. Extra protection given by armour to all magazine spaces. Port and starboard engine rooms are divided by an unpierced longitudinal bulkhead along keel-line. It is said contract for *Kongo* stipulated she should float with 50 feet of her side blown away, should not heel more than 11°, and *automatically* regain the vertical in a specified length of time, though at an increased draught.

Torpedo Notes.—Tubes are twin submerged type, at varying levels, some being only 6 feet below waterline. Except in the case of the tubes in wake of No. 3 Barbette, starboard Tube is before Port Tube. *Kongo* has combined hydraulic and electrically-operated tubes. In *Haruna*, tubes are Armstrong 21-inch side-loading, hydraulically operated.

Engineering Notes.—In *Kongo*, and *Kirishima* Parsons turbines have H.P. rotors on outboard shafts and L.P. on inner shafts, with astern turbines aft and in same casing. Reconstruction included new Kampon boilers.

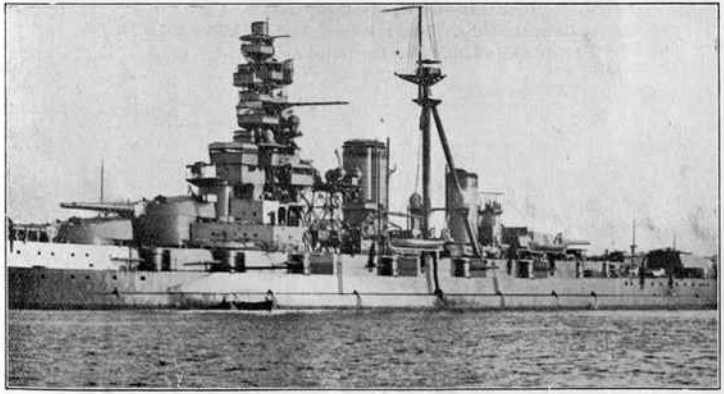
General Notes.—*Kongo* 1910-11 Programme, others 1911-12 Programme. Designed by Sir George Thurston. For *Haruna* 30% of material was imported and erected in Japan. 3 planes added to equipment, 1927. *Haruna* refitted 1926-28, and bulges added, reducing speed by over a knot. Funnels altered on conversion to oil fuel only. *Kirishima* and *Kongo* now altered similarly.



KIRISHIMA. (Note height of S.L. before funnel.) 1933 *Photo.*

HARUNA. (Note "bulges.") 1928 *Photo.*

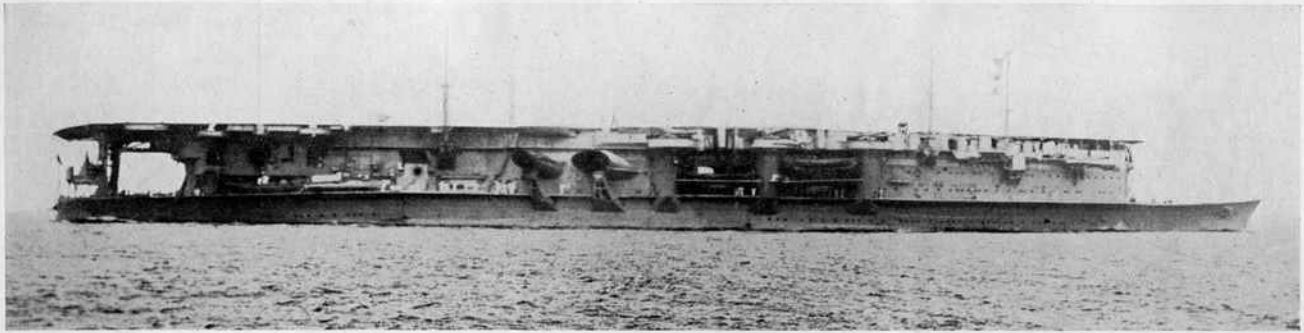
HIYEI. (As gunnery school ship.) 1933 *Photo.*



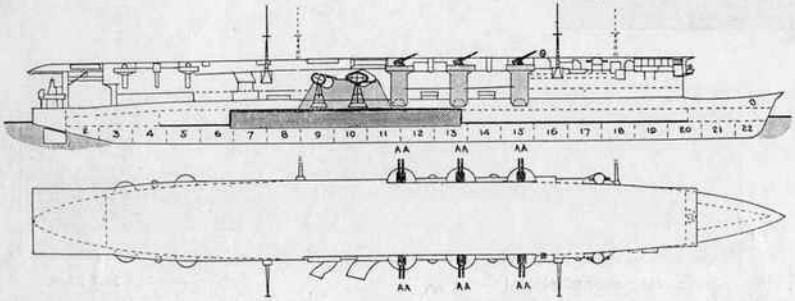
HARUNA. 1929 *Photo.*

KONGO. 1932 *Photo.*

AIRCRAFT CARRIER.

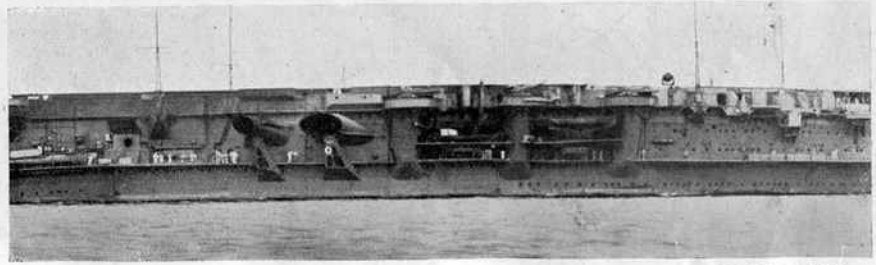


1933 *Photo, Official.*



RYUJO (Yokohama D.Y., April 2, 1931).

Displacement, 7,600 tons.
Length 548 feet. Beam 60½ feet. Draught 15½ feet.
Complement 600.
Guns: **12**—5·1 inch (12·7 cm.) AA.
Machinery: Geared turbines. Kampon boilers. D.H.P. 40,000 = 25 kts.
Laid down in Jan:, 1930. Completed Apl., 1933.



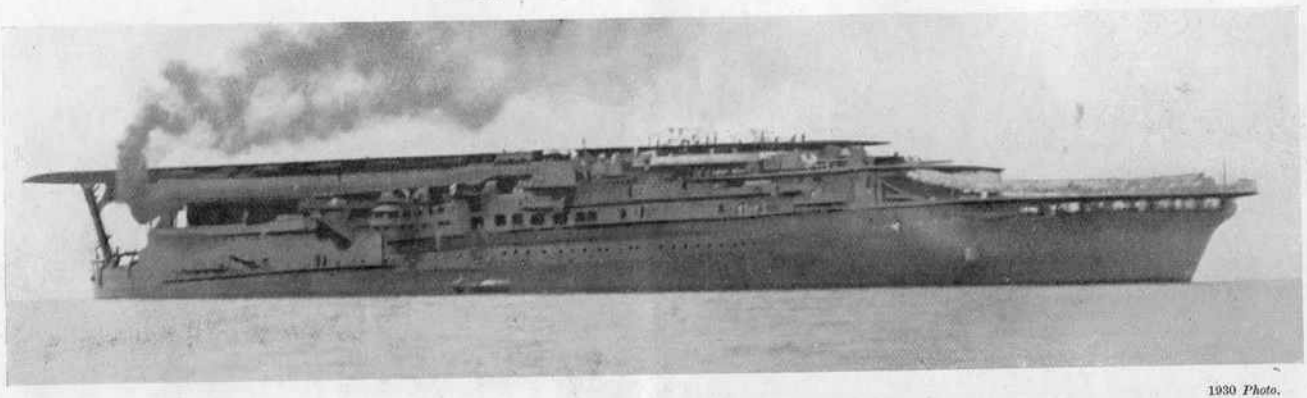
1933 *Photo, Official.*

New Construction

Two 10,000 ton carriers are to be built.

AIRCRAFT CARRIER.

かが KAGA (Kawasaki Co., Kobe, 17th Nov., 1921).
Displacement, 26,900 tons.
Length (*p.p.*) 715 feet. Beam 102¾ feet. Draught 21½ feet.



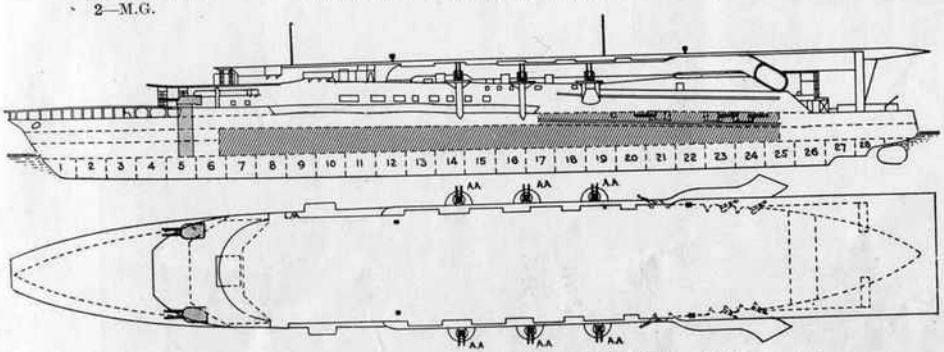
1930 *Photo.*

KAGA.

Guns :
10—8 inch.
4—4.7 inch.
12—4.7 inch AA.
2—M.G.

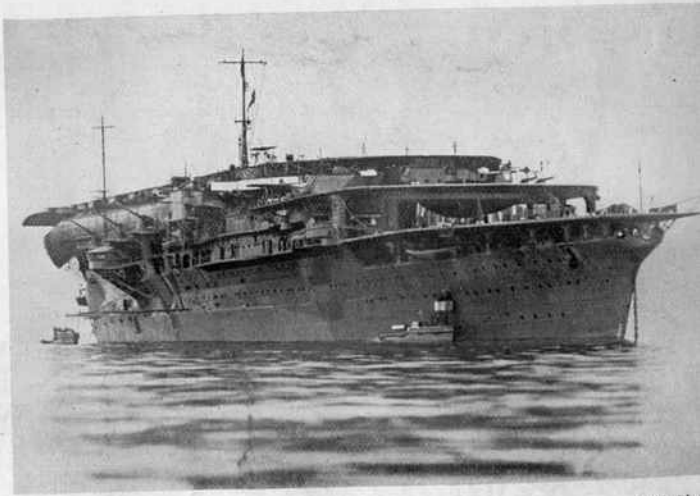
Armour :
" Belt.
" Gunhouses.

Note to plan.—8" turrets now placed a deck higher.



Machinery: Geared Brown-Curtis turbines. Designed S.H.P. 91,000 = 25 kts. (23 kts. was to have been speed originally). Oil: 5,300 tons. 24 Kampon boilers. 4 screws.

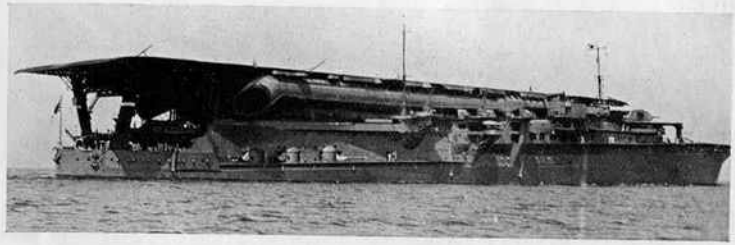
Notes.—Originally laid down July 20th, 1920, as a battleship of 39,900 tons, but has been converted into an aircraft carrier as the result of the Washington Treaty: Smoke is discharged through huge trunks on both sides, extending for nearly half the length of the ship and turning outboard towards the stern. There is accommodation for 60 planes.



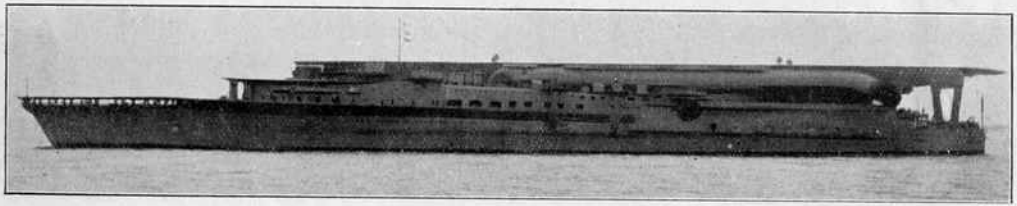
KAGA.

1930 *Pho*

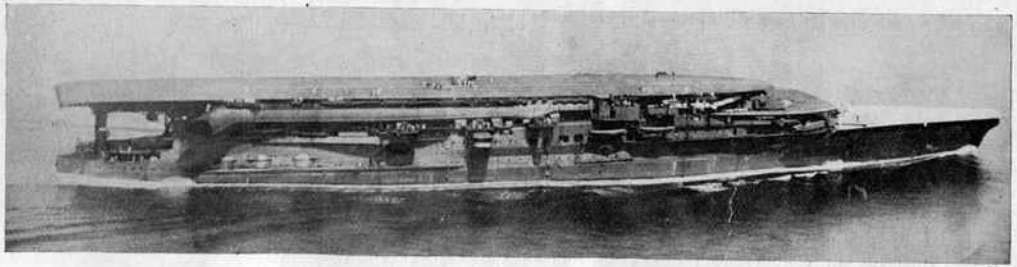
AIRCRAFT CARRIER.



KAGA. 1933 *Photo.*



KAGA. 1929 *Photo.*

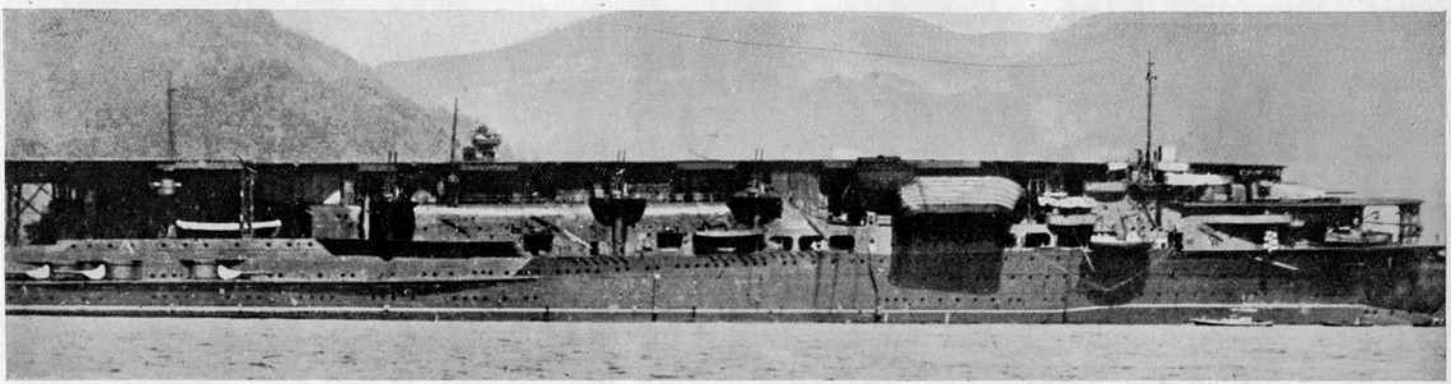


KAGA. 1931 *Photo.*

AIRCRAFT CARRIER.

ぎかあ AKAGI (Kure Dockyard, April 22nd, 1925).

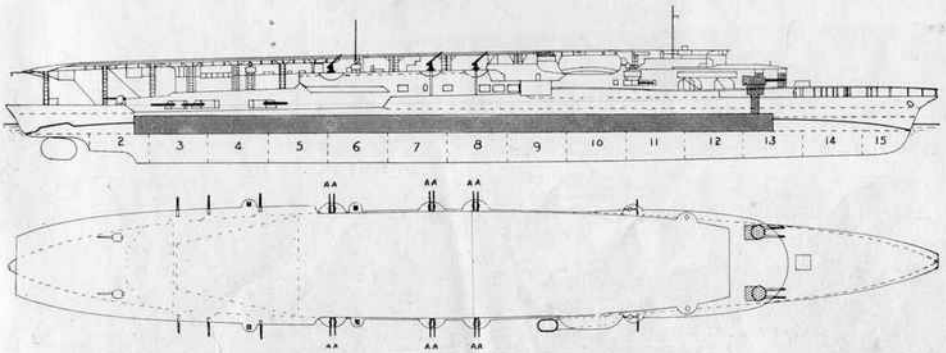
Displacement : 26,900 tons. Length (*p.p.*), 763 feet. Beam, 92 feet. Draught, 21¼ feet.



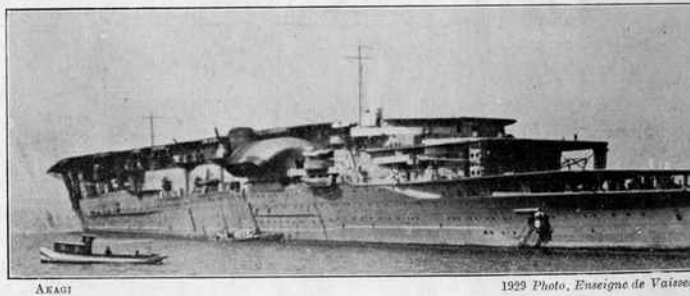
3—8" Guns AA. Guns. AA. Guns. AA. Guns. Funnels. 8" Turret. 1930 *Photo.*

Guns :
10—8 inch
4—4.7 inch
12—4.7 inch AA.
2—MG.

Armour :
" Belt.
" Gunhouses.



Turrets forward now raised a deck higher.



AKAGI 1929 *Photo, Enseigne de Vaisse*

Machinery : Geared turbines. S.H.P. 131,200=28.5 kts. 19 Kampon boilers
Fuel : Coal 2100 tons. Oil 3900 tons. 2 screws.

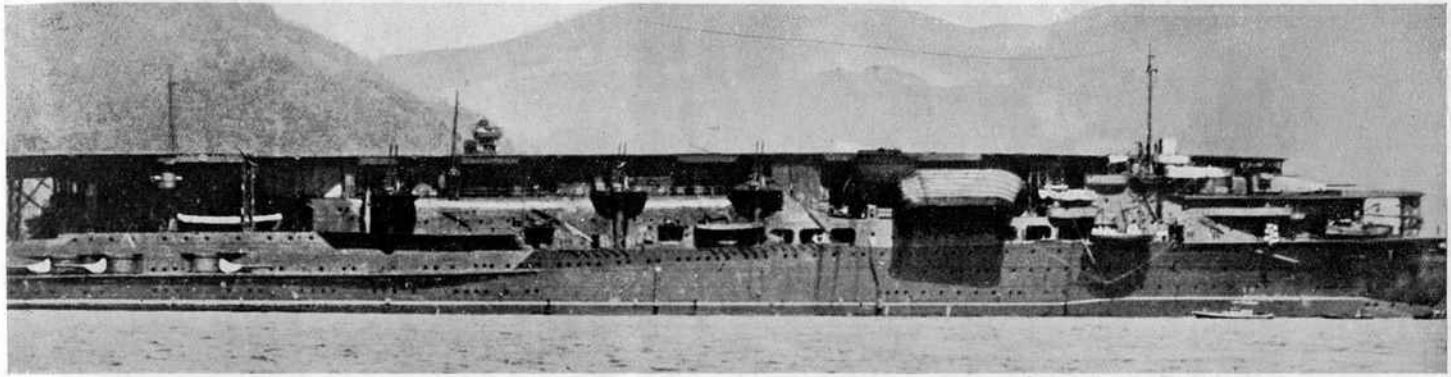
Notes.—Originally laid down on 6th Dec., 1920, as battle cruiser of 42,000 tons, bu converted into aircraft carrier as result of Washington Treaty. Funnels ar arranged on starboard side so that the foremost (which is internally divide into four) is trunked outward and downward amidships, while the secon projects slightly above flight deck abaft of the first. Though she has accommo dation for 50 planes, only about 30 are carried normally. There are 2 aircraf lifts on starboard side, one abaft funnels and a smaller one right astern.

Sister ship, *Amagi*, laid down at Yokosuka Dockyard, and launched late in 192 was so badly damaged by earthquake and fire, September, 1923, that he construction was abandoned, and *Kaga's* hull was appropriated to replace her

AIRCRAFT CARRIER.

ぎかあ AKAGI (Kure Dockyard, April 22nd, 1925).

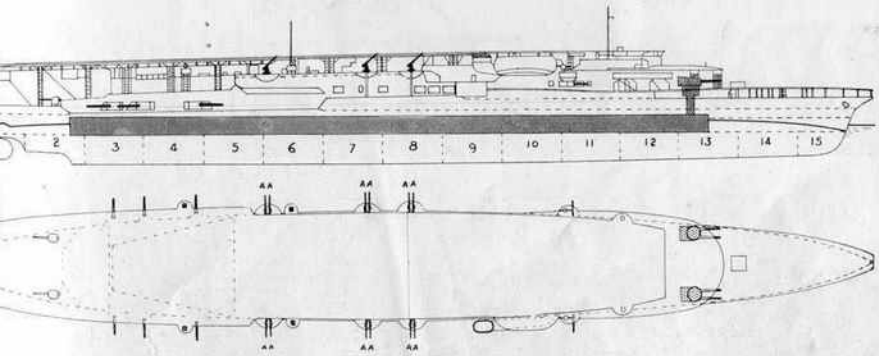
Displacement : 26,900 tons. Length (*p.p.*), 763 feet. Beam, 92 feet. Draught, 21¼ feet.



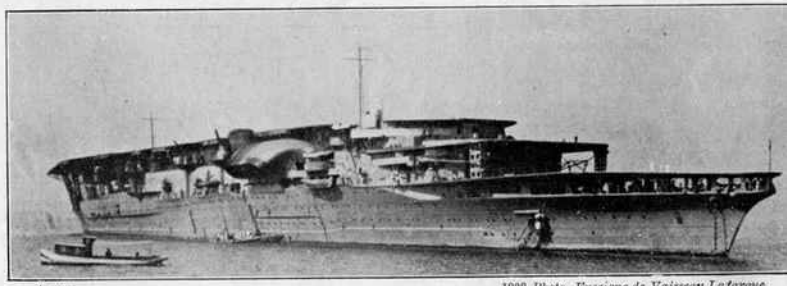
3—8" Guns AA. Guns. AA. Guns. AA. Guns. Funnels. 8" Turret. 1930 *Photo.*

Guns :
10—8 inch
4—4.7 inch
12—4.7 inch AA.
2—MG.

Armour :
" Belt.
" Gunhouses.



Turrets forward now raised a deck higher.



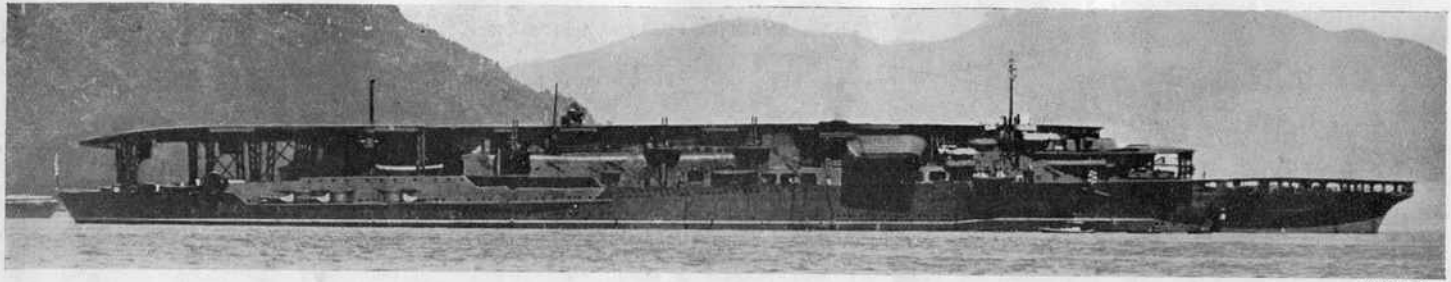
AKAGI 1929 *Photo, Enseigne de Vaisseau Lafargue.*

Machinery : Geared turbines. S.H.P. 131,200=28.5 kts. 19 Kampon boilers.
Fuel : Coal 2100 tons. Oil 3900 tons. 2 screws.

Notes.—Originally laid down on 6th Dec., 1920, as battle cruiser of 42,000 tons, but converted into aircraft carrier as result of Washington Treaty. Funnels are arranged on starboard side so that the foremost (which is internally divided into four) is trunked outward and downward amidships, while the second projects slightly above flight deck abaft of the first. Though she has accommodation for 50 planes, only about 30 are carried normally. There are 2 aircraft lifts on starboard side, one abaft funnels and a smaller one right astern.

Sister ship, *Amagi*, laid down at Yokosuka Dockyard, and launched late in 1922, was so badly damaged by earthquake and fire, September, 1923, that her construction was abandoned, and *Kaga's* hull was appropriated to replace her.

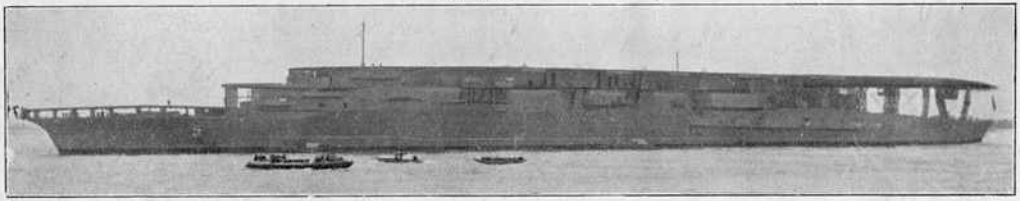
AIRCRAFT CARRIER.



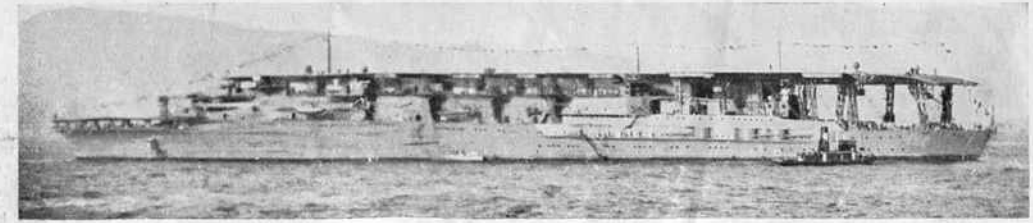
1930 *Photo.*

AKAGI

1933 *Photo.*



1929 *Photo.*



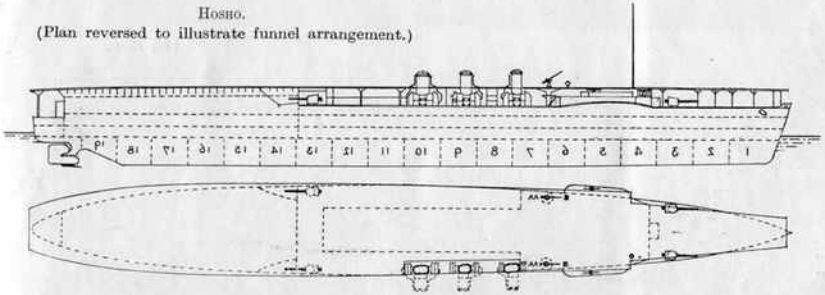
(Note absence of funnels on port side.)

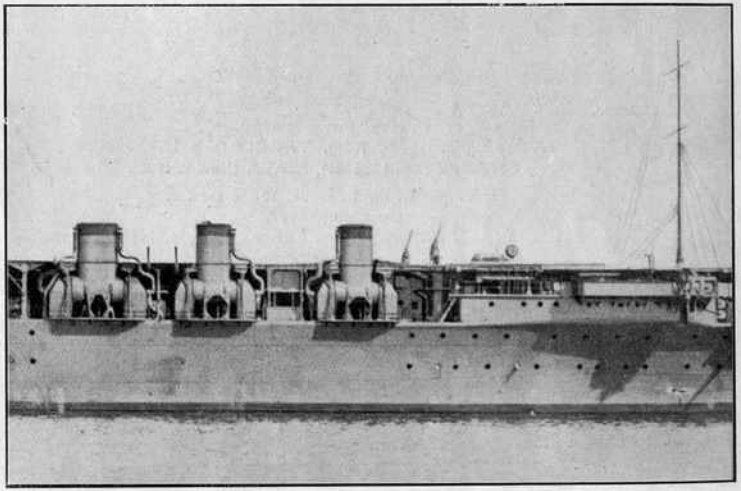
1931 *Photo.*

Hosho with funnels lowered to horizontal position. 1932 *Photo.*

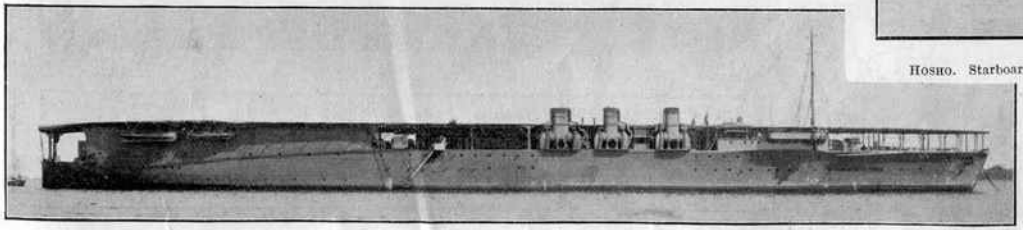
Hosho. *Photo* 1931.

Hosho.
(Plan reversed to illustrate funnel arrangement.)





Hosho. Starboard side amidships. 1925 *Photo, by courtesy of the Navy Dept., Tokyo.*

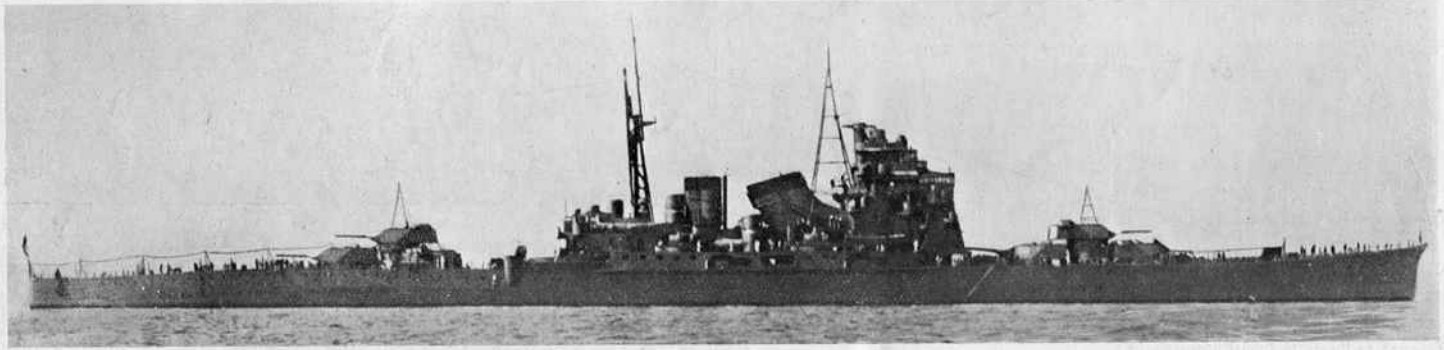


Hosho (as modified). 1925 *Photo, by courtesy of the Navy Dept., Tokyo.*

HOSHO (Asano Co., Tsurumi, 14th November, 1921). Displacement, 7,470 tons. Dimensions: 510 (*p.p.*) × 62 × 20¾ feet. Guns: **4**—5·5 inch, **2**—3 inch AA. 2 geared turbines. S.H.P. 30,000 = 25 kts. 8 Kampon boilers. Fuel: Oil only, 550 tons. Can carry 26 seaplanes with all accessories, etc. Sperry gyro-stabiliser fitted. 2 searchlights.

Note.—Laid down 16th December, 1920; completed December, 1922. First Period ends Dec. 1930. The building of a second ship of this type (to have been named *Shokaku*) was cancelled owing to Washington Treaty.

1926-1928 FIRST CLASS CRUISERS



ATAGO. 1932 *Photo.*

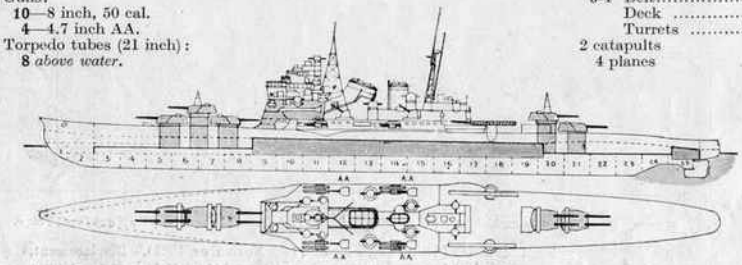
(ATAGO CLASS—4 SHIPS).

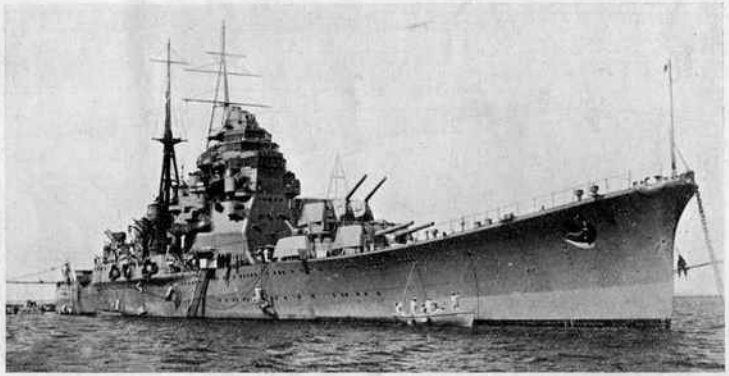
ATAGO (June 16th, 1930), **TAKAO** (May 12th, 1930),
CHOKAI (April 5, 1931), **MAYA** (Nov. 8, 1930).

Standard displacement, 10,000 tons.
Complement, 692.
Length (*p.p.*), 630 feet. Beam, 57 feet. Draught, 16½ feet.

Guns:
10—8 inch, 50 cal.
4—4.7 inch AA.
Torpedo tubes (21 inch):
8 *above water.*

Armour (unofficial):
3-4" Belt.....
Deck .....
Turrets .....
2 catapults
4 planes





ATAGO. 1932 *Photo.*

Machinery: Geared turbines. Boilers: Kampon. S.H.P. 130,000 = 33 kts. *max.* (32 kts. at deep load). Oil: 2,000 tons. Radius at 14-15 kts.: 14,000 miles.

Notes:—Provided for under 1925 and later Programmes. Triple hull, designed to give greatest possible protection against submarines. Vertical and deck protection over boiler and machinery spaces is 410 feet long. Guns are a new model with very high muzzle velocity. 4 planes carried. Cost £2,200,000 each.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Fore Funnel White Bands*
Atago	Kure	Kure	1926	All completed 1932.	Two
Takao	Yokosuka	Yokosuka	1926		Three
Chokai	Mitsu Bishi	Mitsu Bishi	(?) 5/28		One
Maya	Kawasaki, Kobe	Kawasaki	26/5/28		One thick, One thin

(NACHI CLASS—4 SHIPS.)

NACHI (June 15th, 1927), **MYOKO** (April 16th, 1927), **ASHIGARA** (May 22nd, 1928), **HAGURO** (March 24th, 1928).

Standard displacement, 10,000 tons.

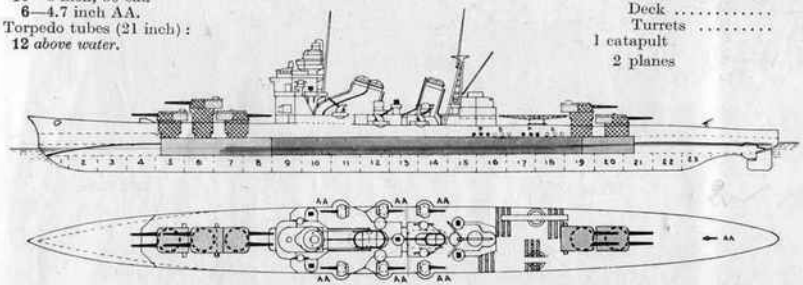
Complement, 692.

Length (*p.p.*), 630 feet. Beam, 57 feet. Draught, 16¼ feet.

192 m 174 4.9.

Guns:
10—8 inch, 50 cal.
6—4.7 inch AA.
Torpedo tubes (21 inch):
12 *above water.*

Armour (unofficial):
3-4" Belt .....
Deck .....
Turrets .....
1 catapult
2 planes



Machinery: Geared turbines. Boilers: Kampon. S.H.P. 130,000 = 33 kts. *max.* (32 kts. at deep load). Oil: 2,000 tons. Radius at 14-15 kts.: 14,000 miles.

Notes.—Provided for under 1923 and later Programmes. Triple hull, designed to give greatest possible protection against submarines. Vertical and deck protection over boiler and machinery spaces is 410 feet long. Guns are a new model with very high muzzle velocity. 4 planes carried. To cost £2,200,000 each.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*
Nachi	Kure	Kure	26/11/24	Nov. 1928	
Myoko	Yokosuka	Yokosuka	25/10/24	31st July. 1929	
Ashigara	Kawasaki, Kobe	Kure	–/4/25	March, 1929	
Haguro	Mitsu Bishi	Yokosuka	–/3/25	April, 1929	

FORE FUNNEL MARKINGS, 1933:

MYOKO	4 white bands.
NACHI	2 white bands.
ASHIGARA	1 white band.
HAGURO	3 white bands.

NACHI.

ASHIGARA.

(NACHI CLASS—4 SHIPS.)

ACHI (June 15th, 1927), **MYOKO** (April 16th, 1927), **ASHIGARA** (May 22nd, 1928), **HAGURO** (March 24th, 1928).

Standard displacement, 10,000 tons.

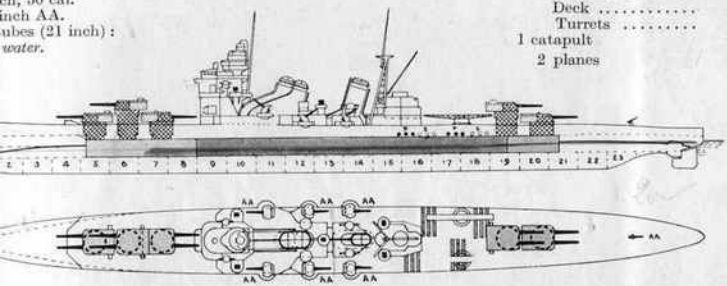
Complement, 692.

Length (*p.p.*), 630 feet. Beam, 57 feet. Draught, 16½ feet.

192 m 18·4 4,9.

ch, 50 cal.
inch AA.
ubes (21 inch):
water.

Armour (unofficial):
3-4" Belt .....
Deck .....
Turrets .....
1 catapult
2 planes



Machinery: Geared turbines. Boilers: Kampon. S.H.P. 130,000 = 33 kts. *max.* (32 kts. ep load). Oil: 2,000 tons. Radius at 14·15 kts.: 14,000 miles.

—Provided for under 1923 and later Programmes. Triple hull, designed to give greatest possible protection against submarines. Vertical and deck protection over boiler and machinery spaces is 410 feet long. Guns are a new model with very high muzzle velocity. 4 planes carried. To cost £2,200,000 each.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*
Nachi	Kure	Kure	26/11/24	Nov. 1928	
Myoko	Yokosuka	Yokosuka	25/10/24	31st July, 1929	
Ashigara	Kawasaki, Kobe	Kure	–/4/25	March, 1929	
Haguro	Mitsu Bishi	Yokosuka	–/5/25	April, 1929	

FORE FUNNEL MARKINGS, 1933:

MYOKO	4 white bands.
NACHI	2 white bands.
ASHIGARA	1 white band.
HAGURO	3 white bands.

NACHI. 1929 *PA*

ASHIGARA. 1931 *A*

1924 FIRST CLASS CRUISERS.

NACHI. 1932 *Photo.*

MYOKO. 1930 *Photo.*

NACHI. (Fore funnel now raised.) 1929 *Photo.*

(KINUGASA CLASS—2 SHIPS.)

KINUGASA (Oct. 24th, 1926), **AOBA** (Sept. 24th, 1926).

Standard Displacement, 7,100 tons. Complement, 604.

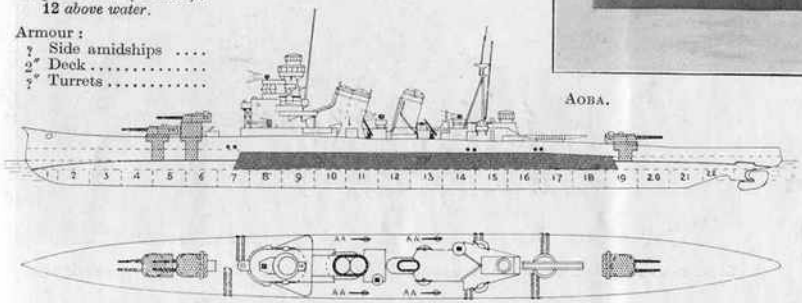
Length (*w.l.*), 580 feet. Beam, 50¾ feet. Draught, 14¾ feet.

Guns:
6—8 inch.
4—4.7 inch AA.
2—M.G.

Torpedo tubes (21 inch):
12 *above water.*

1 catapult
2 planes

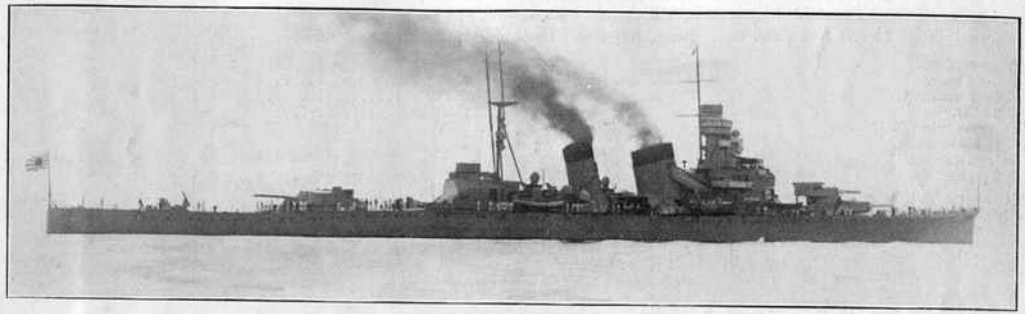
Armour:
? Side amidships ....
2" Deck .....
?" Turrets .....



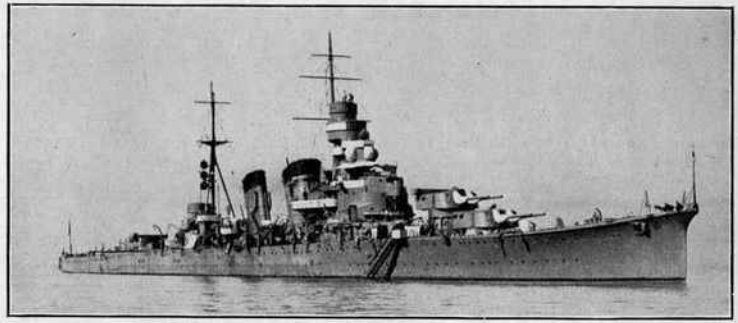
Machinery: Geared turbines. Boilers: 12 Kampon (10 oil, 2 mixed). S.H.P. 95,000 = 33 kts.
Coal: 400 tons, oil: 1,600 tons. 2 planes carried.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*
Kinugasa	Kawasaki, Kobe	Kawasaki	Jan., 1924	Sept., 1927	
Aoba	Mitsu Bishi, Nagasaki	Mitsu Bishi	Feb., 1924	Dec., 1927	

Notes—Provided for under 1923 Programme. 2 planes carried. Although of same general design as *Kako* class, they differ in arrangement of armament.



AOBA.



AOBA. 1927 *Photo* (*added* 1928).

1922 FIRST CLASS CRUISERS. (*Junyokan.*)

(KAKO CLASS—2 SHIPS.)

KAKO (10th April, 1925), **FURUTAKA** (26th Feb., 1925).

Standard displacement, 7100 tons. Complement, 620.

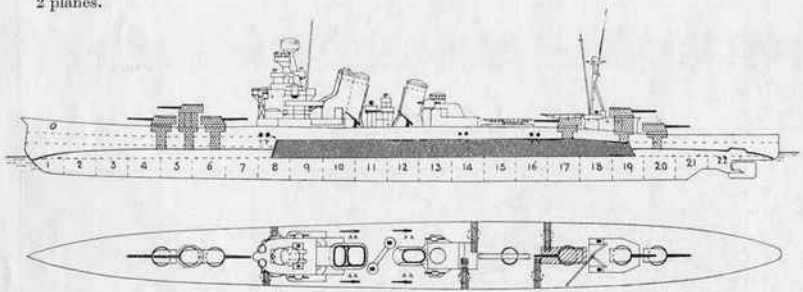
Length (*w.l.*), 580 feet. Beam, 50¾ feet. Draught, 14¾ feet.

Guns:
6—8 inch.
4—3 inch AA.
2 M.G.

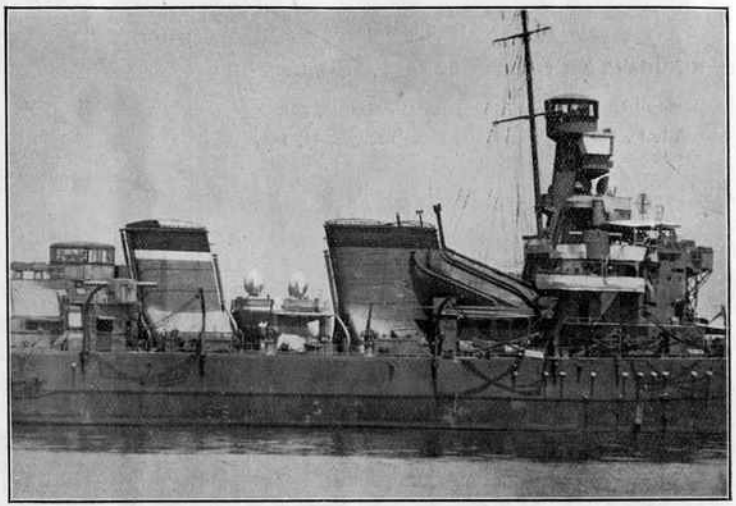
Torpedo tubes (21 inch):
12 *above water.*

Catapult:
2 planes.

Armour:
?" Side amidships.....
2" Deck .....
?" Turrets .....



Machinery: Geared turbines. Boilers: 12 Yarrow (10 oil, 2 mixed). S.H.P. 95,000 = 33 kts. Fuel: 400 tons coal, 1200 tons oil.



KAKO. Detail view before alteration to funnels. *Photo added* 1926.

FURUTAKA.

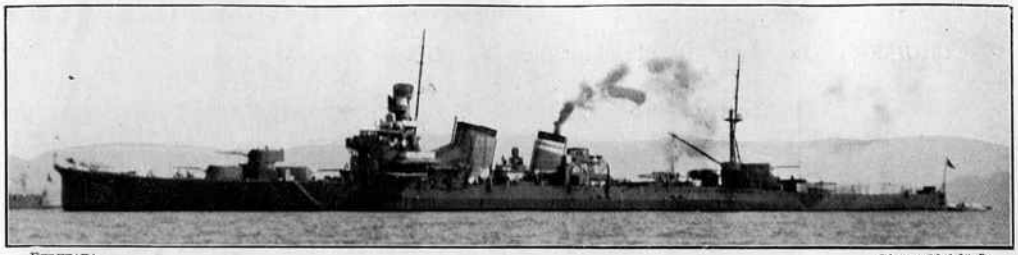
Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*
Kako	Kawasaki, Kobe	Kawasaki	Jan., 1923	1926.	
Furutaka	Mitsu Bishi, Nagasaki	Mitsu Bishi	Dec., 1922		

General Notes.—Provided for under 1922 Programme. A most original design, the undulating deck line, gun disposition in six single turrets, curious bridge work and mast, trunked funnels, and angled hull side all being noteworthy. Suffer from limited axial gun fire and it is reported that they are deficient in sea-going qualities. *Aoba* and *Nachi* designs have been developed from *Kako*, and the outstanding feature of the type is the sacrifice of accommodation and freeboard in order to utilise tonnage for military qualities.

Appearance Notes.—These ships and *Kinugasa* class are now differentiated thus:—

KAKO.....1 white band on after funnel.
FURUTAKA..2 „ „ „
AOBA.....1 red „ „
KINUGASA..2 „ „ „

1933 *Photo.*

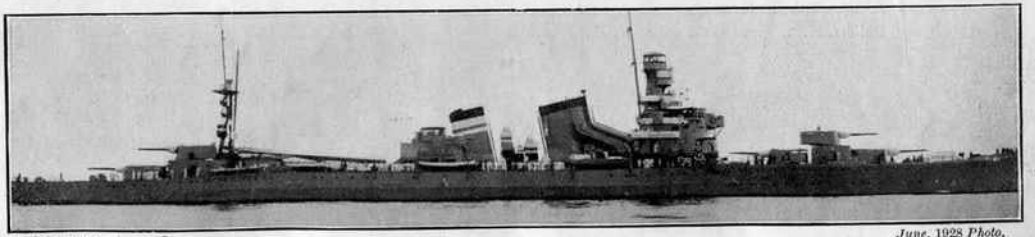


FURUTAKA

Photo added 1927.

KAKO.

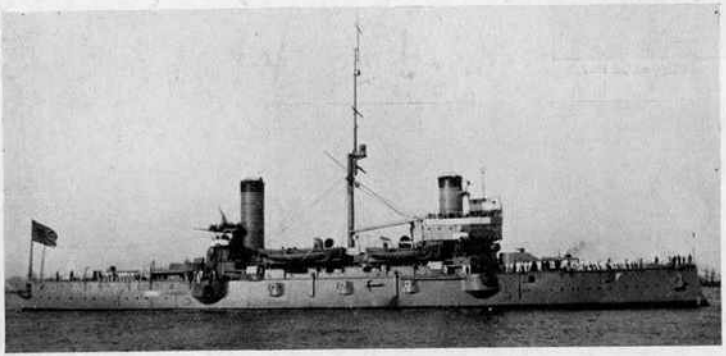
1930 *Photo.*



FURUTAKA.

June, 1928 Photo.

OLD FIRST CLASS CRUISERS (*Junyokan.*) (Rated as First-Class Coast Defence Vessels.)



KASUGA. *Photo* 1931.

6 inch guns removed from main deck and bridge altered.

KASUGA (October, 1902). かすか

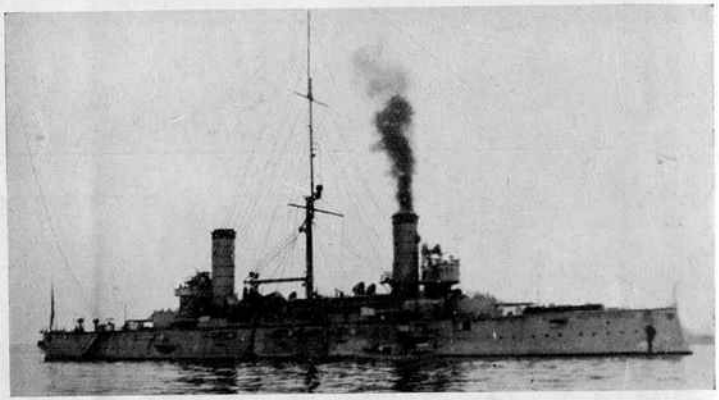
Displacement, 7,080 tons. Complement, 595.

Dimensions as *Nisshin*.

Guns:
1—10 inch.
2—8 inch 45 cal.
4—6 inch 45 cal.
4—3 inch AA.
2 M.G.
Torpedo Tubes.

Armour: as *Nisshin*.

Machinery, Boilers, H.P., Speed and Fuel as *Nisshin*.



NISSHIN. 1919 *Photo, Sevard, Weymouth.*

NISSHIN (Feb., 1903). んしつに

Displacement, 7080 tons. Complement, 610.

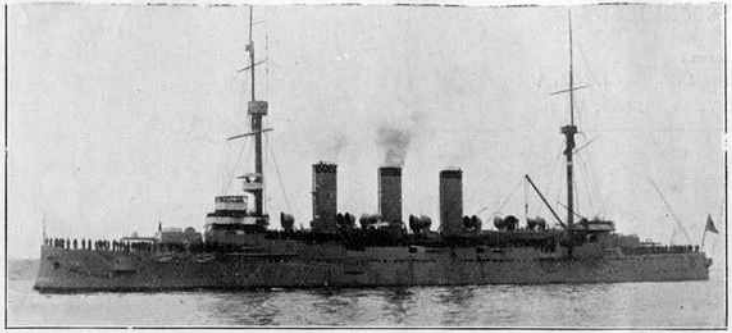
Length (*waterline*), 357 feet. Beam, 61 feet 11 ins. *Maximum* draught, 25¼ feet.

Guns (Armstrong):
4—8 inch, 45 cal.
14—6 inch, 45 cal.
4—3 inch AA.
2 Maxims.
Torpedo tubes (18 inch):
4 *above water* (incasemates).

Armour (Terni):
6″ Belt (amidships) .....
4½″ Belt (ends) .....
1½″ Deck (on slopes) .....
5½″ Turrets .....
5½″ Turret bases (N.C.)...
6″ Lower deck side .....
4½″ Lower deck bulkheads
6″ Battery (N.C.) .....
4½″ Battery (bulkheads)...
4¾″ Conning tower .....

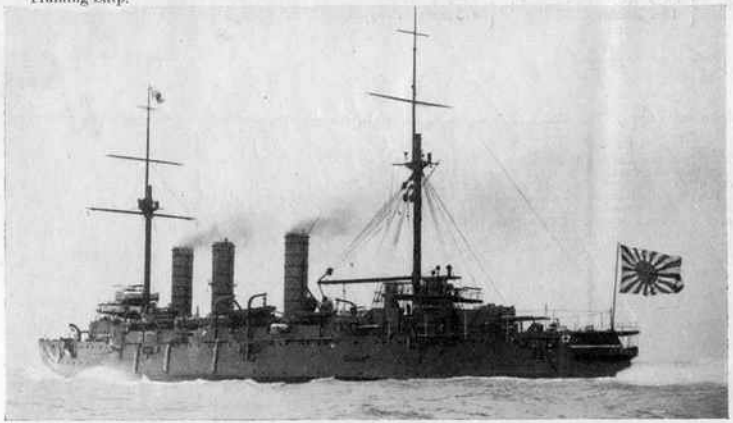
Machinery: 2 sets 3 cylinder vertical triple expansion. 2 screws. Boilers: 12 Kampon. Designed H.P. 13,500=20 kts. Coal: *normal*, 650 tons; *maximum*, 1,200 tons. 4 searchlights.

Nisshin and *Kasuga*—Laid down for Argentina by Ansaldo, Genoa, in 1902, as the *Moreno* and *Rivadavia*. Purchased end of 1903 by Japan for £760,000, just before outbreak of Russo-Japanese War.



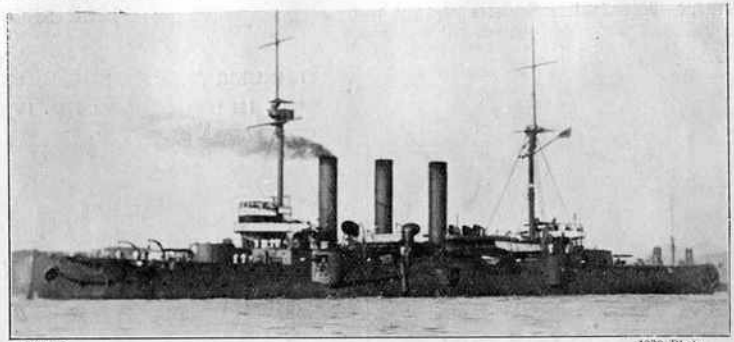
YAKUMO. 1929 *Photo.*

もくや **YAKUMO** (Vulcan Co., 1899). Displacement, 9010 tons. Complement, 698. Length (*p.p.*), 390 feet. Beam, 64¼ feet. *Mean* draught, 23¾ feet. Length *over all*, 434 feet. Guns: **4**—8 inch, 40 cal., **8**—6 inch, 40 cal., **6**—3 inch, 4 S.L. Torpedo tubes (18 inch): **4** *submerged*. Armour (Krupp): 7″ Belt (amidships), 3½″ Belt (ends), 2½″ Deck (slopes), 6″ Turrets (N.C.), 6″ Turret bases (N.C.), 5″ Lower deck side, 6″ Casemates (8), 10″ Conning tower. (Total weight, 2040 tons.) Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 24 Belleville. Designed H.P. 15,500 = 20½ kts. Coal: *normal* 550 tons; *max.* 1200 tons. Employed as Midshipmen's Training Ship.



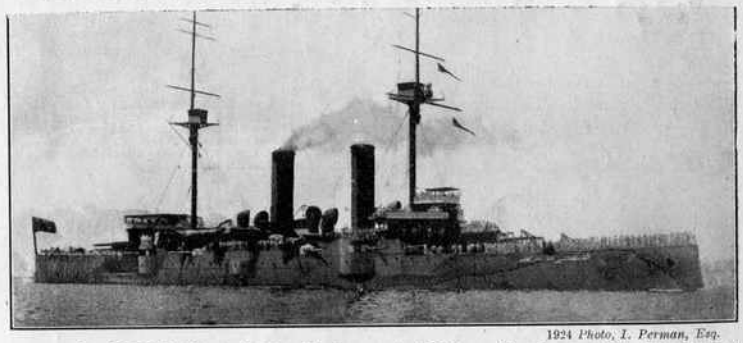
1931 *Photo, Official.*

まつあ **ADZUMA** (St. Nazaire, 1899). Displacement, 9227 tons. Complement, 644. Length (*waterline*), 430 feet. Beam, 59½ feet. *Maximum* draught, 25 feet. Length *over all*, 452½ feet. Guns (Armstrong): **4**—8 inch, 40 cal., **8**—6 inch, 40 cal., **6**—3 inch, 4 S.L. Torpedo tubes: **4** *submerged*. Armour (Krupp mostly): 7″ Belt (amidships), 3½″ Belt (ends), 2½″ Deck (on slopes), 6″ Turrets and bases (H.N.), 6″ Casemates (H.N.), 5″ Side above belt. (Total weight, 2000 tons.) Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 24 Belleville. Designed H.P. 17,000 = 21 kts. Coal: *normal* 600 tons; *maximum* 1200 tons.



IWATE 1929 *Photo.*

いづも **IDZUMO** (Armstrong, 1899) & いわて **IWATE** (Armstrong, 1900). Displacement, 9180 tons. Complement, 658. Length (*p.p.*), 400 feet. Beam, 68½ feet. *Max.* draught, 24¼ feet. Length *over all*, 434 feet. Guns (Armstrong): **4**—8 inch, 40 cal., **8**—6 inch, 40 cal., **1**—3 inch AA., **5**—3 inch, **3** M.G., 4 S.L. Torpedo tubes: **4** *submerged*. Armour (Krupp): 7″ Belt (amidship), 3½″ Belt (ends), 2½″ Deck (slopes), 5″ Lower deck (redoubt), 6″ Turrets and bases, 6″ Casemates, 14″ Conning tower. (Total 2100 tons.) Machinery by Humphry and Tennant: 2 sets 4 cylinder triple expansion. 2 screws. Boilers: Belleville. Designed H.P. 16,000 = 20·75 kts. Coal: *normal* 550 tons; *maximum* 1400 tons. Begun at Elswick 1898-99, and completed 1900-01. *Iwate* employed as Cadets' Training Ship, *Idzumo* as Midshipmen's Training Ship.



1924 *Photo, I. Perman, Esq.*

まさあ **ASAMA** (March, 1898). Displacement, 9240 tons. Complement, 648. Length (*o.a.*), 442 feet. Beam, 67½ feet. *Maximum* draught, 24½ feet. Guns (Armstrong): **4**—8 inch, 40 cal., **8**—6 inch, 40 cal., **5**—3 inch AA., **4**—2½ pdr. Torpedo tubes (18 inch): **4** (*submerged*). Armour (Harvey-nickel): 7″ Belt (amidships), 3½″ Belt (ends), 2″ Deck (slopes), 5″ Upper belt (amidships), 3½″ Bulkheads to it, 6″ Turrets and bases, 6″ Casemates (10), 14″ Conning tower (Total, 2100 tons). Machinery: 2 sets 4-cylinder triple expansion. 2 screws. Boilers: 16 Miyabara. Designed H.P. *forced* 18,000 = 21½ kts. Coal: *normal* 550 tons, *maximum* 1400 tons. 3 S.L. Built by Armstrong. Very "handy" ship. *Asama* was badly damaged by grounding on Pacific Coast of Central America, in December of 1914. Was salved, repaired and refitted. Employed as Cadets' Training Ship.

1932 SECOND CLASS CRUISERS

(6 Mogami Class.)

MIKUMA (Mitsubishi, Nagasaki), **MOGAMI** (Kure D.Y.), **NO. V** ( )

NO. III (Kawasaki D.Y.), **NO. IV** (Yokosuka D.Y.), **NO. VI** ( )

Reported that the fifteen 6·1 inch will be in five turrets arranged as in *Atago* class.

Standard displacement : 8,500 tons.

Dimensions : Length { 624·9 feet. / 190·5 metres } Beam : { 59·6 feet. / 18·2 metres. } Draught : { 14·7 feet. / 4·5 metres.

Guns : 15—6·1" (15·5 cm.).
?—5" AA. (12·7 cm.).

H.P. : 90,000. Speed : 33 kts.

Building under the Fleet Replenishment Law of 1931–38.

General Notes.—Although nominally a reply to the *Deutschland* this ship represents the battleship type in armament and protection which will tend to form a basis for future construction when such ships again figure in the naval programmes of other Powers. Modelled on the *Nelson* the quadruple turrets were finally adopted after a variety of other gun dispositions had been considered, this grouping having been selected for the pre-War ships of the *Flandre* and *Tour ille* classes. The turrets are widely separated to localise the effects of shell fire and reduce blast on the tower when trained abaft the beam. The percentage of displacement devoted to protection is the highest yet recorded in any battleship.

(JINTSU CLASS—3 SHIPS.)

うづんじ　　かな

JINTSU (8th Dec., 1923), **NAKA** (24th March, 1925),

いたんせ

SENDAI (30th Oct., 1923).

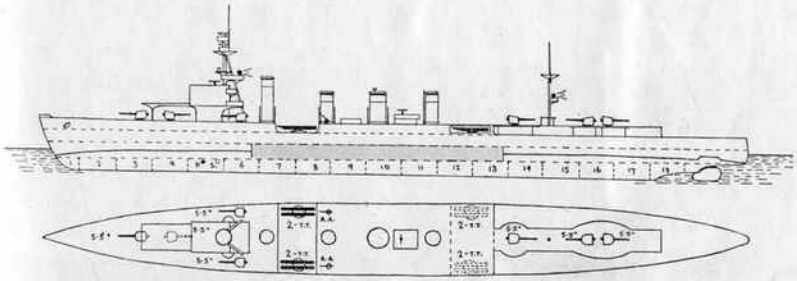
Standard displacement, 5195 tons. Complement, 450.

Length (*p.p.*), 500 feet; (*o.a.*) 535 feet. Beam, 46¾ feet. Draught, 15 feet 10½ in.

Guns:
7—5.5 inch, 50 cal.
3—3 inch, 13 pdr., 40 cal. AA.
2 M.G.

Torpedo tubes:
8—21 inch, *above water*.

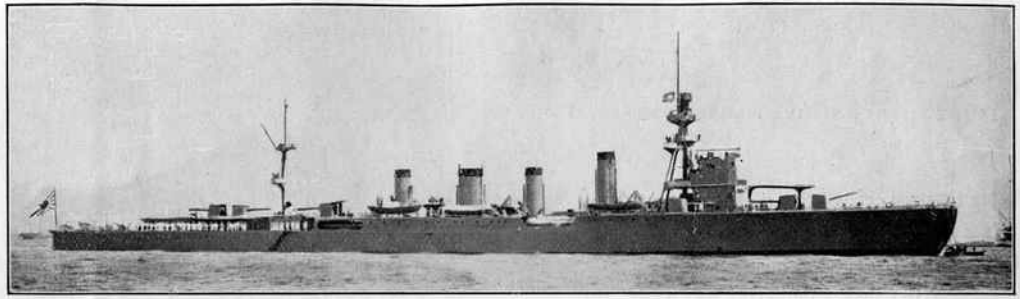
Armour:
2" Side (amidships) .....
2" C.T. .....
Planes carried: One.



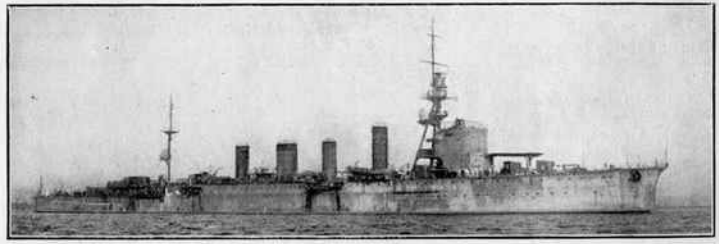
Machinery: 4 geared turbines. 4 screws. Boilers: 16 Kampon. Designed S.H.P. 90,000 = 33 kts. Fuel: 350 tons *normal*, 1500 tons *max*.

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials*	*1st Period*
Jintsu	Kawasaki, Kobe	Kawasaki	4 Aug., '22	31 July, '25		1925-33
Sendai	Mitsu Bishi, Nagasaki	Mitsu Bishi	16 Feb., '22	29 Apr., '24		1924-32
Naka	Yokohama Dock Co.	Mitsu Bishi	24 May, '24	30 Nov., '25		1926-34

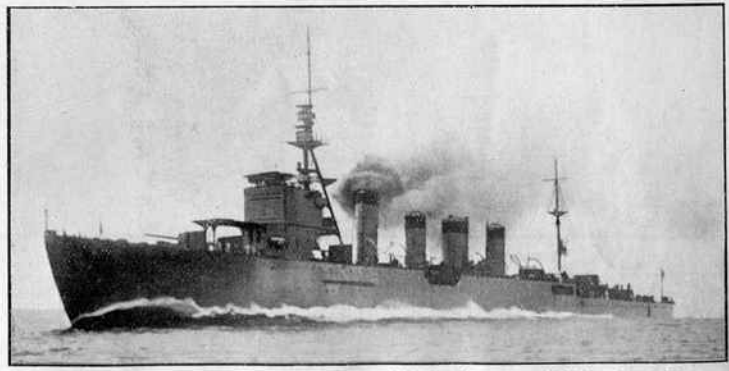
General Notes.—Slightly enlarged and improved editions of *Natori* class on following page. Laying down of *Naka* was delayed by earthquake of Sept., 1923. Catapult fitted to flight platform forward, 1929. Foremost boiler is fitted for mixed firing.



SENDAI (*Jintsu* was similar, but after collision bow has been rebuilt as *Naka*). *Photo added* 1926.



NAKA (Note bow). *Photo added* 1927.



SENDAI. 1925 *Photo by courtesy of the Navy Dept., Tokyo.*

1920-21 SECOND CLASS CRUISERS.

"NATORI" CLASS (6 SHIPS).

づすい らがな

ISUDZU (29th Oct., 1921). **NAGARA** (25th April, 1921).

りとな らゆ

NATORI (16th Feb., 1922). **YURA** (15th Feb., 1922).

ぬき まくふあ

KINU (29th May, 1922). **ABUKUMA** (16th March, 1923).

Standard displacement, 5170 tons. Comp., 438.

Length (*p.p.*) 500 feet, (*o.a.*) 535 feet. Beam, 46⅔ feet.
Draught, 15 feet 10½ in.

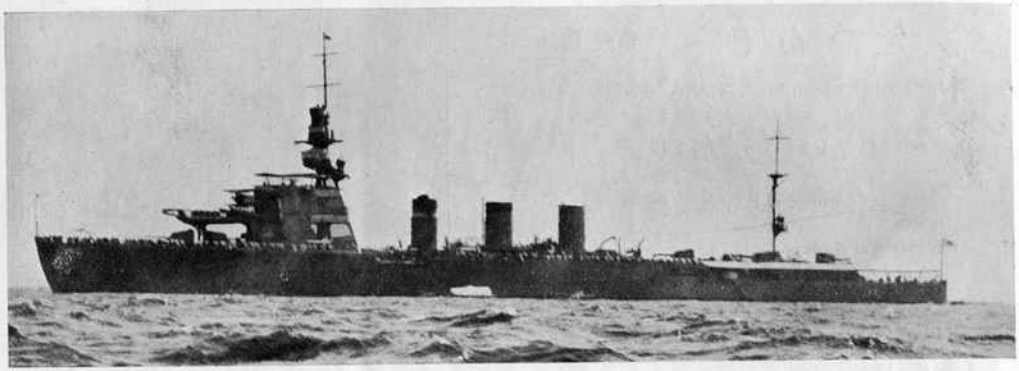
Guns :—
7—5.5 inch, 50 cal.
3—3 inch, 13 pdr. 40 cal. AA.
2 M.G.

Armour :
2″ Side (amidships).
2″ C.T.

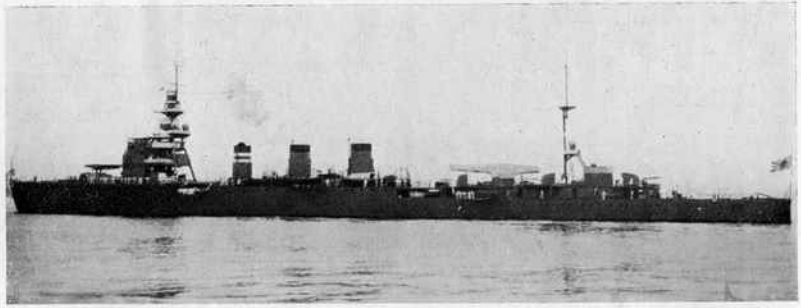
Planes carried : One.

Torpedo tubes : (21 inch)
8 (*above water*).

Machinery : 4 geared turbines. 4 screws. Boilers : 12 Kampon, 8 oil and 4 coal burning. Designed S.H.P. 90,000 = 33 kts.
Fuel : 350 tons *normal*, 1500 tons *max.*



YURA (showing catapult on flight platform). 1930 *Photo.*



NATORI and ABUKUMA (showing catapult mounted between guns Nos. 5 and 6). 1933 *Photo.*

Name	*Builder*	*Machinery*	*Begun*	*Completed*	*Trials (unofficial)*	*First Period*
Isudzu	Uraga Dock Co.	Mitsu Bishi	10 Aug., '20	Aug., '23	65,000=33.4	1923-31
Nagara	Sasebo D.Y.	Kawasaki	9 Sept., '20	April, '22		1922-30
Natori	Mitsu Bishi, Nagasaki	Mitsu Bishi	14 Dec., '20	Sept., '22		1922-30
Kinu	Kawasaki Co., Kobe	Kawasaki	17 Jan., '21	Nov., '22		1922-30
Yura	Sasebo D.Y.	Kawasaki	21 May, '21	March, '23		1923-31
Abukuma	Uraga Dock Co.	Mitsu Bishi	8 Dec., '21	Sept., '23		1923-31

General Notes.—Commencement authorised by 1919 Naval Programme. Cost of each ship is said to be £1,750,000.

Plan : Details generally as *Kuma*, but with aircraft hangar added forward.

KUMA CLASS—5 SHIPS.

まく **KUMA** (July 14th, 1919), また **TAMA** (Feb. 10th, 1920),

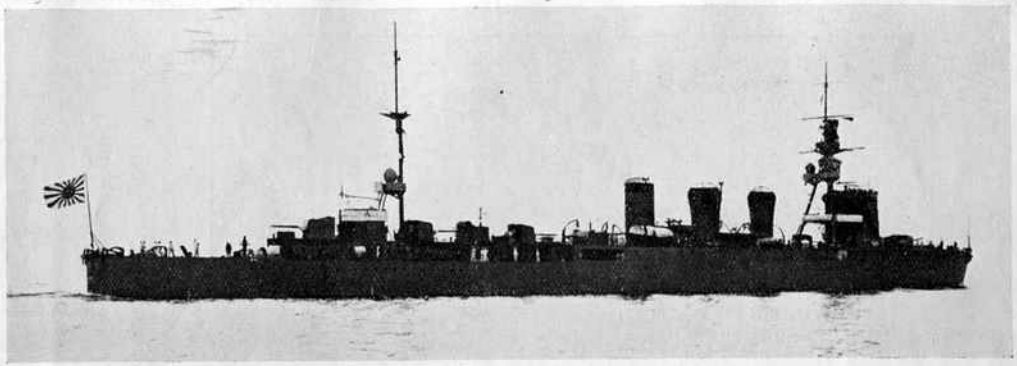
おほい **OHI** (July 15th, 1920),

みかたき **KITAKAMI** (July 3rd, 1920), そき **KISO** (Dec. 14th, 1920).

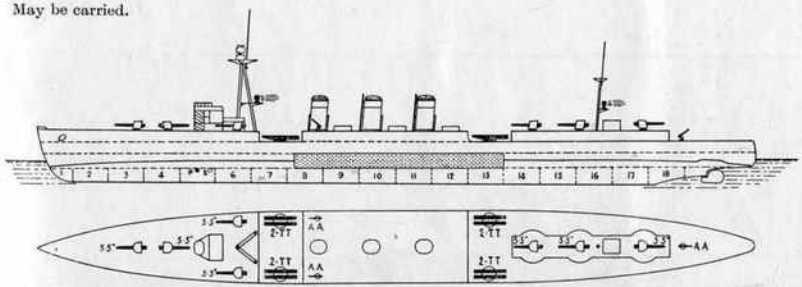
Standard displacement, 5100 tons. Complement, 439.
Length (*p.p.*) 500 feet, (*o.a.*) 535 feet. Beam, 46¾ feet. *Mean* draught. 15¾ feet.

Guns :
7—5.5 inch, 50 cal.
3—3 inch (13 pdr.), 40 cal.
— M.G.
Torpedo tubes (21 inch) :
8 *above water.*
Searchlights :
3—30 inch.
Mines :
May be carried.

Armour (*unofficial*) :
2" (H.T.) Side (amidships).....
2" C.T. .....



Kiso (fitted with anti-flare tops to funnels). 1931 *Photo.*

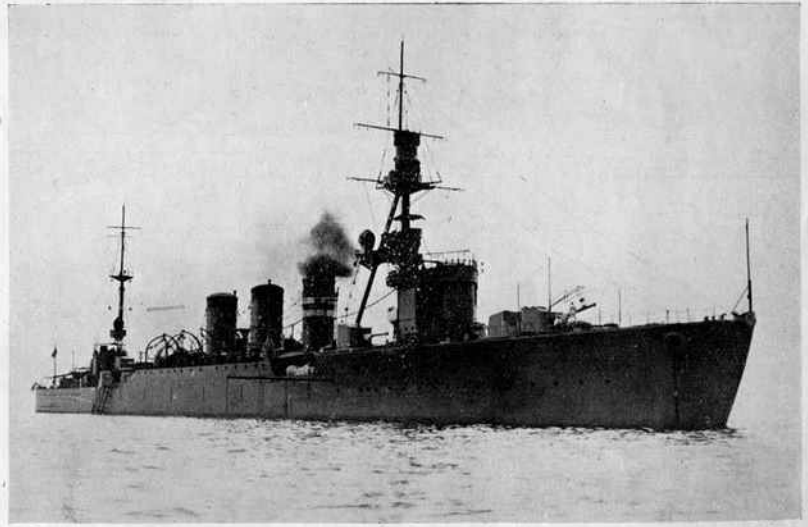


Ahead : **3**—5.5 inch. Broadside : **6**—5·5 inch, **4**—21 inch T.T. Astern : **1**—5.5 inch.

Machinery : Geared Parsons or Curtis Turbines. 4 screws. Boilers : 12 Kampon, 10 oil fuel, 2 mixed firing. Designed H.P. 90,000 = 33 kts. Fuel : *normal*, 350 tons ; *maximum*, about 1500 tons =8500 miles at 10 kts.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Second Period*	*First Trials.*	*Boilers.*
Ohi	Kawasaki	Kawasaki	24/11/19	Sep., '21	1929-37	−34	All 12 Kampon.
Kitakami	Sasebo D.Y.	Kawasaki	Sep., '19	Apl., '21			
Kiso	Mitsubishi / Nagasaki	Mitsubishi	10/6/19	May, '21			
Kuma	Sasebo D.Y.	Kawasaki	Aug. '18	Aug. '20	1928-36		
Tama	Mitsubishi / Nagasaki	Mitsubishi	Aug. '18	Jan., '21	1929-37		

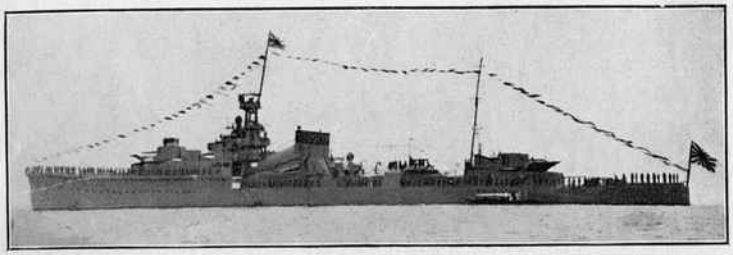
General Notes.—No official data published concerning trials, but are reported to have averaged about 64,500 and about 33 kts. Cost about £1,000,000 each. An aeroplane was added to the equipment of these ships in 1927.



Ohi. 1930 *Photo.*

General Notes.—*Kuma* and *Tama* begun under the 1917 Naval Programme ; *Ohi*, *Kitakami*, *Kiso* under 1918 Programme. Completion of *Ohi* delayed by failure of one of her engines when she was running trials at end of Dec., 1920. Said to be very efficiently sub-divided and the general scheme of protection has been developed since the war. Fuel supply is somewhat above the average = 6,000 miles at 15 kts., and between 1000 and 1100 miles at full speed.

1922 SECOND CLASS CRUISER.



1928 *Photo.*

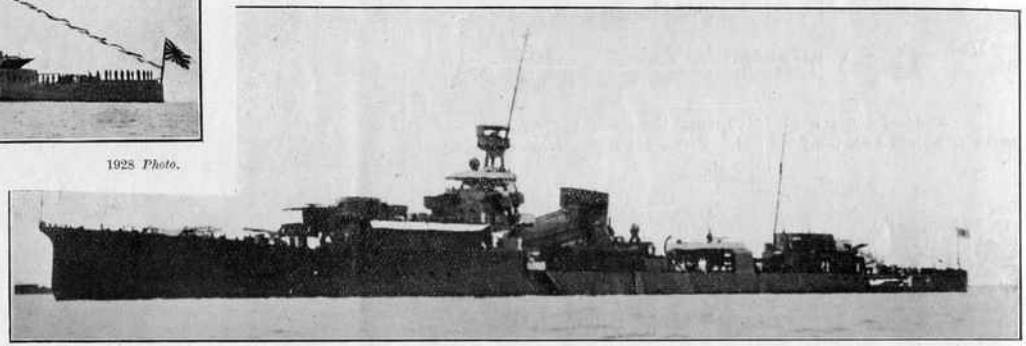
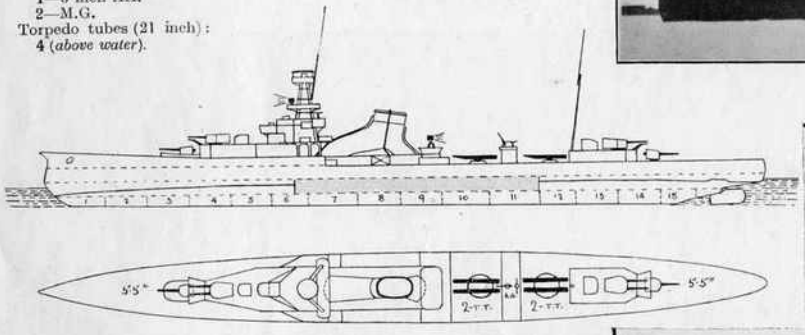


Photo added 1926.

YUBARI (5th March, 1923).

Standard displacement, 2890 tons. Complement, 328.
Length (*p.p.*), 435 feet. Beam, 39½ feet. Draught, 11 feet 9 ins.
Guns:
6—5·5 inch, 50 cal.
1—3 inch AA.
2—M.G.
Torpedo tubes (21 inch):
4 (*above water*).
Armour (unofficial):
2″ side (H.T.)

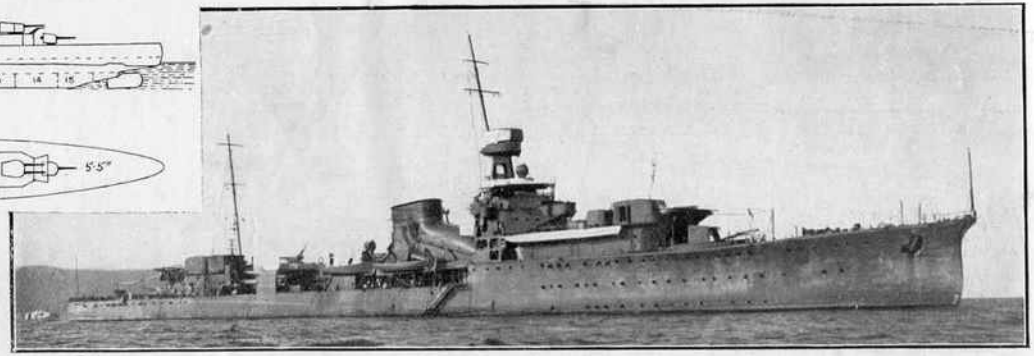


Machinery: Turbine. 3 screws. Boilers: 8 Kampon (coal and oil-burning). Designed S.H.P. 50,000 = 33 kts. Fuel: tons.
2 searchlights.

Note.—Laid down 5th of June, 1922, at Sasebo Dockyard. Completed 1924. First Period, 19·4-32.

Torpedo Notes.—Tubes are arranged so that they can be moved to either broadside.

Engineering Notes.—Machinery was built by Sasebo Dockyard.



YUBARI.

Photo added 1928.

Special Note.

This remarkable vessel represents an attempt on the part of Japanese naval constructors to combine, on a displacement of 2,890 tons, speed and offensive power little inferior to those of "Kuma" and "Natori" types. She is employed on Flotilla Leader duties at present. In appearance, she is quite unlike any other Cruiser in existence.

(TENRYU CLASS—2 SHIPS.)

たつた TATSUTA (29th May, 1918) & うりんて TENRYU (11th Mar., 1918)

Standard displacement, 3230 tons. Complement, 332.

Length (*o.a.*) 468 feet (*p.p.*), 440 feet. Beam: 40¾ feet. *Mean* draught: 13 feet.

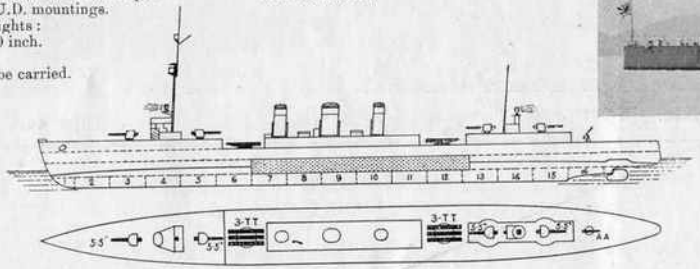
Guns:
4—5·5 inch, 50 cal.
1—3 inch (13 pdr.) 40 cal. AA.
2 M.G.

Torpedo tubes:
6 *above water* in two triple U.D. mountings.

Searchlights:
2—30 inch.

Mines:
May be carried.

Armour (unofficial):
2″ or 1½″ (H.T.) Side amidships .....
—″ Deck (H.T.) at ends .....
—″ C.T. .....



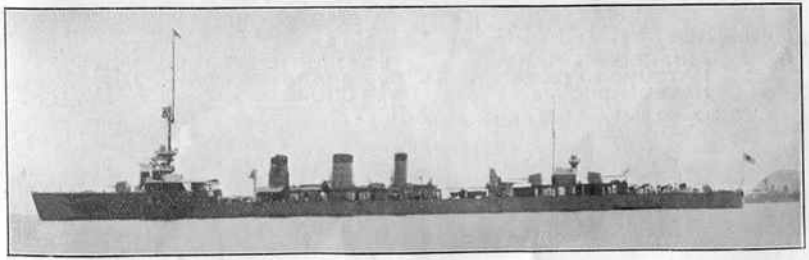
Ahead: 1—55· in.

Broadside: 4—5·5 in., 6—21 in. T.T.

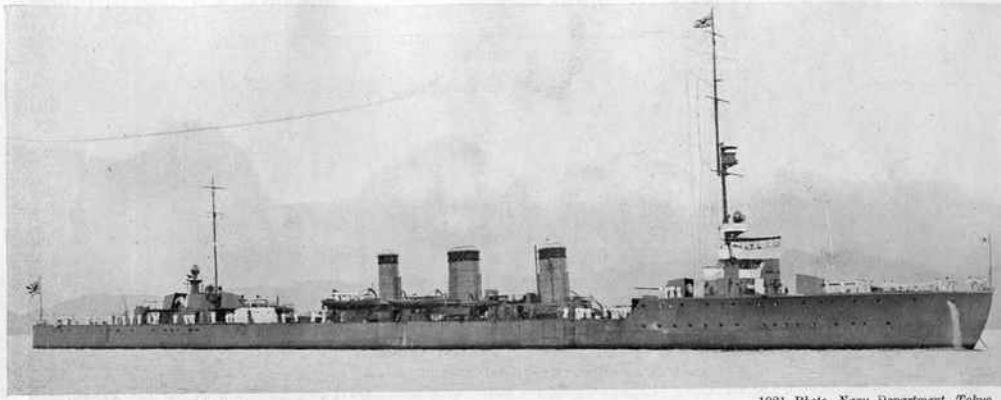
Astern: 1—5·5 in.

Machinery: Parsons or Curtis turbines. 3 screws. Boilers: 10 Kampon. Designed H.P. 51,000 =31 kts. Fuel: Coal and oil, *normal*, ? tons; *maximum*, 900 tons = 6000 miles at 10 kts. (unofficial).

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*2nd Period*	*Trials*	*Boilers*
Tatsuta	Sasebo D.Y.	Kawasaki	July, '17	31 Aug., '19	1927–35	51,000 = 33 kts.	Kampon
Tenryu	Yokosuka D.Y.	Mitsu Bishi	May, '17	20 Nov., '19	1927–35		

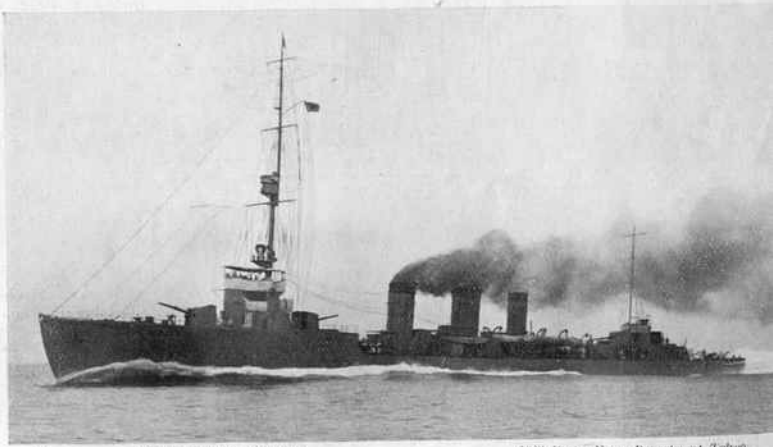


TATSUTA. (Blast screen added forward of third gun.)



TATSUTA. 1921 *Photo, Navy Department, Tokyo.*

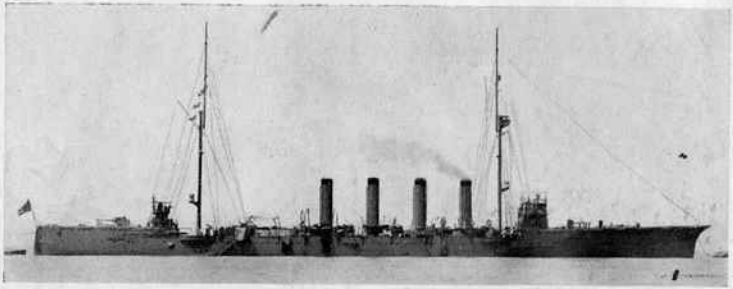
General Notes.—Begun under the 1916 Naval Programme. Are said to be exceptionally fast and handy ships, able to turn in a little less than their own lengths. In design are simply enlarged destroyers, and very lightly framed. Both are employed as Flotilla Leaders.



TENRYU. (Now has tripod foremast.) 1923 *Photo, Navy Department, Tokyo.*

Photo added 1926.

SECOND CLASS CRUISERS.



HIRADO. 1921 *Photo. Navy Dept., Tokyo.*

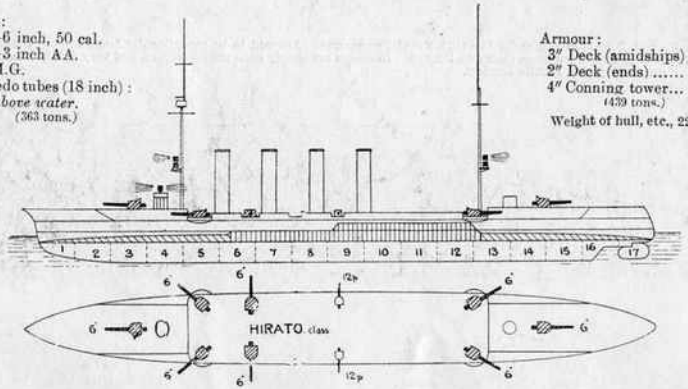
とらひ HIRADO (June, 1911), きはや YAHAGI (Oct., 1911).

Standard displacement 4400 tons. Complement, 452.

Length (*p.p.*), 440 feet; (*o.a.*), 475 feet. Beam, 46½ feet. *Max.* draught, 17¾ feet.

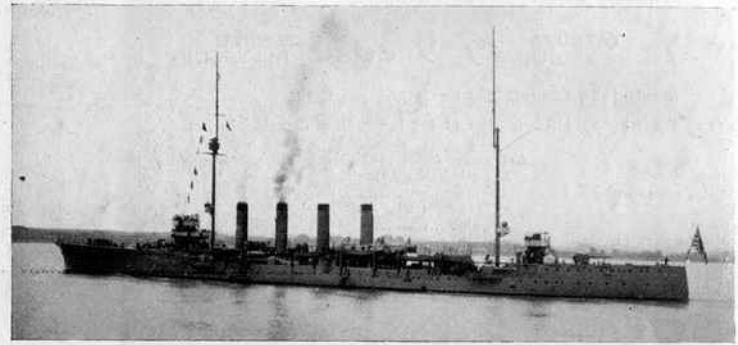
Guns:
8—6 inch, 50 cal.
2—3 inch AA.
2 M.G.
Torpedo tubes (18 inch):
3 *above water.*
(363 tons.)

Armour:
3″ Deck (amidships)
2″ Deck (ends) .....
4″ Conning tower... (439 tons.)
Weight of hull, etc., 2278 tons



Machinery: Curtis turbines; (2 screws), except *Yahagi*, Parsons turbines. (4 screws). Boilers: 6 Kampon. Designed H.P. 22,500 = 26 kts. Coal: *normal* 500 tons; *maximum* 900 tons + 300 oil = 10,000 miles at 10 kts.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Third Period*	*Trials H.P. = kts.*	*Boilers*
Hirado	Kawasaki Co.	Kawasaki Co.	Aug.,'10	June'12	1928-36	.....	Kampon
Yahagi	Mitsu Bishi	Mitsu Bishi	June,'10	July,'12	1928-36	27,408 = 26.8	in all.



YAHAGI. 1931 *Photo.*

DESTROYERS

6 + 6 ARIAKE CLASS

6 *Ariake* class + 6 to be built:

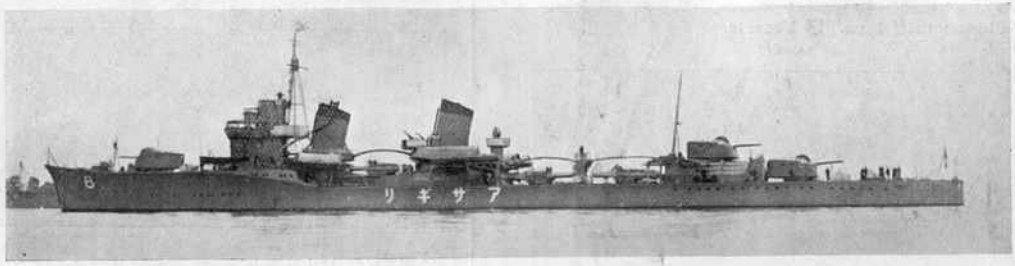
ARIAKE (Kawasaki S.B.Y.,), **NENOHI** (Uraga D.Y., Dec. 22, '32),
HATSUHARU (Sasebo D.Y., Nov. '33), **WAKABA** (Sasebo D.Y.),
HATSUSHIMO (Uraga D.Y., Aug. '33), **YUGURE** (Maizuru minor naval Works).

Built under 1931 and 1932 Programmes.
Displacement: 1,378 tons.
Dimensions: 337·8×32·4×8·4 feet (103×9·9×2·6 metres).
Armament:
Machinery: 34 kts.

This class is to consist of 12 vessels, *Nenohi* being the first completed in Sept. 1933.

DESTROYERS.

24 Fubuki Class.



ASAGIRI. 1931 *Photo.*

24 boats

Fubuki ..	1927	***Uranami*** ..	1928	***Ayanami*** ..	1929	***Yugiri*** ..	1930	***Akatsuki***	1933
Shirayuki	1928	***Shinonome***		***Asagiri*** ..	1929	***Ushio***		***Hibiki***	1933
Hatsuyuki		***Usugumo***	1927	***Amagiri*** ..	1929	***Oboro***	1931	***Ikadsuchi***	1932
Miyuki		***Shirakumo***		***Sagiri*** ..	1929	***Akebono***		***Inadzuma***	1932
Murakuma		***Isonami***		***Shikinami*** ..	1929	***Sazanami***			

Authorised under 1926 and subsequent sections of the Fleet. Replenishment Law. 1700 tons (1850 tons full load). Dimensions: 367½ × 34 × 10½ feet. Armament: 6—5.1 (12.7 C.M.), 50 cal., 2 AA. M.G. and 9—21 inch tubes. Machinery: Parsons geared turbines. Boilers: Kampon. H.P. 50,000 = 35 kts. Oil: 400 tons? Complement, 197.

Notes.—Builders not fully advised, but *Fubuki*, *Hatsuyuki* and *Shikinami* are by Maidzuru D.Y.; *Shirayuki* by Yokohama D.Y. Co.; *Miyuki*, *Ushio*, *Isonami* by Uraga D. Co.; *Shinonome* and *Asagiri* by Sasebo D.Y.; *Usugumo* and *Amagiri* by Ishikawajima Co.; *Shirakumo*, *Murakuma*, *Yugiri*, *Akebono*, *Ayanami* by Fujinagata Co.

Meanings of some of above names are as follows:—

Fubuki	Snowstorm	*Shinonome*	Day dawn	*Amagiri*	Heaven mist
Shirayuki	White snow	*Usugumo*	Fleecy clouds	*Sagiri*	Valley mist
Hatsuyuki	First snow of winter	*Shirakumo*	White cloud	*Yugiri*	Evening mist
Murakuma	Cloud clusters	*Asagiri*	Morning mist	*Shikinami*	Waves chasing each other
				Ushio	The tide

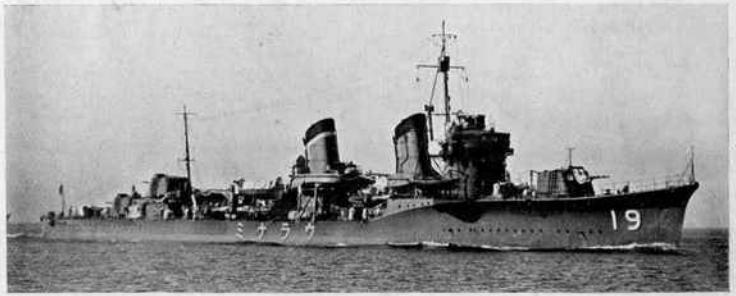
(A) "Ikadzuchi" type. 4 Vessels.

IKADZUCHI. 1933 *Photo.*

(AKATSUKI, HIBIKI, INADZUMA, similar with small fore funnel, high bridge, and big flat-sided shields to Torpedo Tubes.)

Hibiki is the first rivetless ship in the Japanese Navy.

(B) "Amagiri" type. 11 Vessels.



URANAMI. 1933 *Photo.*

ASAGIRI. 1933 *Photo.*

(AMAGIRI, AKEBONO, AYANAMI, OBORO, SAGIRI, SAZANAMI, USHIO, YUGIRI similar, with collar ventilators around funnels, and bridge control tower level with funnel caps which in all this class (24) is an anti-flare fitting.)

DESTROYERS.

Fubuki Class—*continued.*

(C) "Shinonomi" type. 9 Vessels.

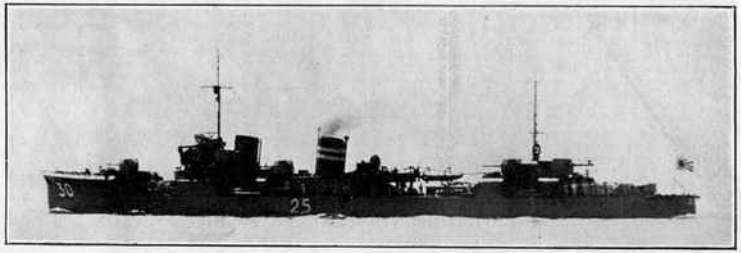
SHIRAKUMO (note shields to Tubes). 1932 *Photo.*

FUBUKI. 1933 *Photo.*

(HATSUYUKI, ISONAMI, MIYUKI, MURAKUMO, SHINONOME, SHIRAKUMO, SHIRAYUKI, USUGUMO, similar with smaller bridge and cowls abreast funnels.)

12 Mutsuki Class.

UTSUKI *Photo* 1933.



UTSUKI. *Photo added* 1927.

12 boats: ***Mutsuki*** (ex-No. 19), (by Sasebo Dockyard), ***Kisaragi*** (ex-No. 21), (by Maidzuru Dockyard), ***Yayoi*** (ex-No. 23), (by Uraga Dock Co.), ***Utsuki*** (ex-No. 25), (by Ishikawajima Co.), ***Satsuki*** (ex-No. 27), (by Fujinagata Co.) ***Minatsuki*** (Uraga Dock Co.), ***Fumitsuki*** (Fujinagata Co.), ***Nagatsuki*** (Ishikawajima Co.), ***Kikutsuki*** (Maidzuru Dkyd.), ***Mikadzuki*** (Sasebo Dkyd.), ***Mochidzuki*** (Uraga Dock Co.), ***Yudzuki*** (Fujinagata Co.), (ex-Nos. 28–34). Enlarged editions of *Kamikaze*. Built under 1923, 1924 and 1925 sections of Navy Law. 1315 tons. Dimensions: 320 (*p.p.*) × 30 × 9¾ feet (*max.* draught). Armament: **4**—4.7 inch, 50 cal., **2** AA. M.G and **6**—21 inch tubes (in triple deck mountings). 3 S.L. Machinery: Parsons 4-shaft turbines. 4 Kampon boilers. Designed H.P. 40,000 = 34 kts. Oil: 350 tons. Endurance: 4000 miles at 15 kts. Complement, 150.

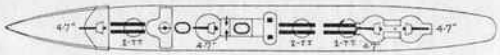
Name.	*Begun.*	*Launch.*	*Comp.*
Minatsuki	24/3/25	25/5/26	22/3/27
Fumitsuki	20/10/24	16/2/26	3/7/26
Nagatsuki	16/4/25	6/10/26	30/4/27
Kikutsuki ..	15/6/25	15/5/26	20/11/26
Mikadzuki	21/8/25	12/7/26	7/5/27
Mochidzuki	23/3/26	28/4/27	31/10/27
Yudzuki ..	27/11/26	4/6/27	25/7/27

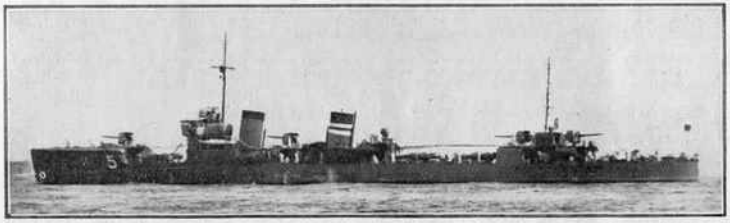
Name.	*Begun.*	*Launch.*	*Comp.*
Mutsuki ..	21/5/24	23/7/25	25/3/26
Kisaragi ..	3/6/24	5/6/25	21/12/25
Yayoi ..	11/1/24	11/7/25	28/8/26
Utsuki ..	11/1/24	15/10/25	14/9/26
Satsuki ..	1/12/23	25/3/25	15/11/25

Note.—These 12 destroyers bear poetical names of the 12 months of the year.

9 Kamikaze Class.

ASAKAZE. 1925 *Photo, by courtesy of the Navy Dept., Tokyo.*





HARUKAZE. *Photo added 1927.*

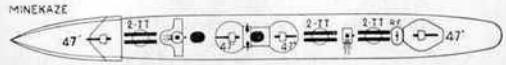
9 *boats:* ***Kamikaze*** (ex-No. 1) and ***Asakaze*** (ex-No. 3) (both by Mitsubishi, Z.K.), ***Harukaze*** (ex-No. 5), ***Matsukaze*** (ex-No. 7), ***Hatakaze*** (ex-No. 9), (all three by Maidzuru D.Y.), ***Oite*** (ex-No. 11) (by Uraga Dock Co.), ***Hayate*** (ex-No. 13), (by Ishikawajima Co.), ***Asanagi*** (ex-No. 15), (by Fujinagata Co.), ***Yunagi*** (ex-No. 17), (by Sasebo Dockyard.)
Built under 1921 and 1922 Sections of Navy Law. 1270 tons. Dimensions: 320 (*p.p.*) × 30 × 9$\frac{7}{8}$ feet (*max. draught*). Armament: **4**—4.7 inch, 50 cal., **2** AA. M.G. and **6**—21 inch torpedo tubes. 2 S.L. Machinery: Parsons 4-shaft turbines. 4 Kampon boilers. Designed H.P. 38,500 = 34 kts. Oil: 350 tons. Endurance: 4000 miles at 15 kts. Complement, 148.

Name.	*Begun.*	*Launch.*	*Comp.*	*Name*	*Begun.*	*Launch.*	*Comp.*
Kamikaze	15/12/21	25/9/22	28/12/22	*Hayate*	11/11/22	23/3/25	21/12/25
Asakaze	16/2/22	8/12/22	16/6/23	*Asanagi*	5/3/23	21/4/24	29/12/24
Harukaze	16/5/22	18/12/22	31/5/23	*Yunagi*	17/9/23	23/4/24	24/4/25
Matsukaze	2/12/22	30/10/23	5/4/24				
Hatakaze	3/7/23	15/3/24	30/8/24				
Oite	16/3/23	27/11/24	30/10/25				

Meanings of some of the above names:—

Asakaze	Morning breeze	*Matsukaze*	Wind in the pine trees	*Asanagi*	Morning calm
Harukaze	Spring breeze	*Oite*	Fair wind	*Yunagi*	Evening calm

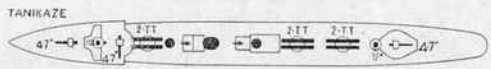
15 Minekaze class.

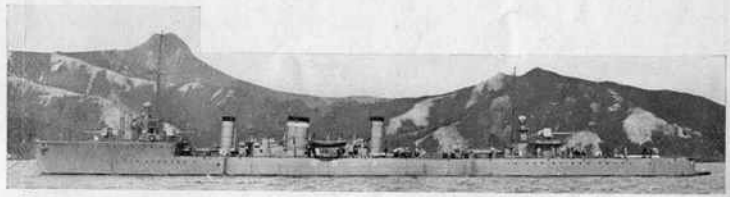


OKIKAZE. 1933 *Photo.*

15 *Minekaze* class: ***Akikaze*** and ***Yukaze*** (both by Mitsubishi Z.K., Nagasaki); ***Hokaze, Shiokaze, Tachikaze,*** (all by Maidzurd D.Y.). Believed authorised under the 1919 and 1920 Sections of the 1918-24 Navy Law. ***Namikaze, Numakaze, Nokaze.*** (all by Maidzurd Dockyard). ***Minekaze, Okikaze, Nadakaze, Shimakaze.*** All by Maidzuru D.Y.; ***Sawakaze, Hakaze*** and ***Yakaze*** all built by Mitsubishi Co., at Nagasaki or Kobe. Displacement: 1215 tons. Dimensions: 320 (*p.p.*), 336$\frac{1}{2}$ (*o.a.*) × 29$\frac{1}{4}$ × 9$\frac{1}{2}$ feet (*mean draught*). Armament: **4**—4.7 inch, 45 cal., **2** M.G. (AA.), and **6**—21 inch torpedo tubes. 2—30 inch searchlights. Designed S.H.P. 38,500 = 34 kts. Machinery: Parsons 4 shaft turbines and 4 Kampon or Kansei boilers. Oil: 315 tons. Complement: *Minekaze, Sawakaze,* 145, others 148. *Minekaze* and *Sawakaze* belong to the 1917 Programme; *Okikaze, Nadakaze, Shimakaze, Hakaze* and *Yakaze* to the 1918 Programme.

2 Tanikaze class.



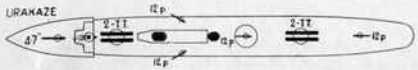


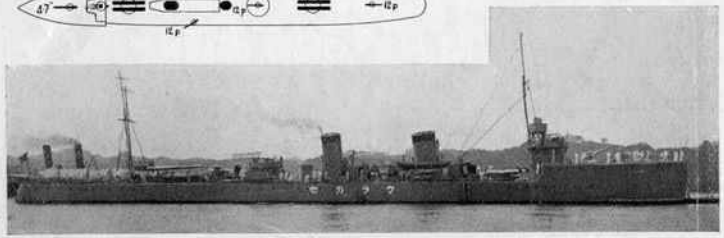
TANIKAZE. 1921 *Photo, Navy Dept., Tokyo.*

2 *Tanikaze* class: ***Tanikaze*** (Maidzuru D.Y., July, 1918) and ***Kawakaze*** (Yokosuka D.Y., 1917). 1180 tons. Dimensions: 320 × 29$\frac{1}{4}$ × 9$\frac{1}{2}$ feet. Armament: **3**—4.7 inch, 45 cal., **2** M.G., **6**—21 inch tubes in three twin deck mountings. 2—30 inch searchlights. Designed H.P. 34,000 = 34 kts. Machinery: Parsons turbines. Boilers: 4 Kansei. Oil fuel only, 315 tons. Complement, 128. Begun under 1916 Programme.

1st Class Destroyers—*continued.*

1 Special Boat.





1921 *Photo, Navy Department, Tokyo.*

1 *Yarrow* type: ***Urakaze*** (Yarrow, Scotstoun, 1915). 810 tons. Dimensions: 275 (*p.p.*), 283 (*o.a.*) × 27·5 × 9·5 feet. Armament: 1—4·7 in., 4—12 pdr., 4—21 inch tubes in two twin deck mountings. Machinery: 22,000 H.P. turbines = 28 kts. Yarrow large tube boilers. Fuel: 248 tons oil only. Endurance about 1800 miles at 15 kts. Complement, 117. Trials: 30·26 kts. at 1082 tons load displacement.

Note.—It was intended that this boat should have a Diesel engine for cruising speed, combined by Föttinger hydraulic transmission to the turbines. Owing to the War, the Föttinger gear and Diesel engine were never delivered. They were replaced by a big oil tank. *Kawakaze* (sister-boat) ceded to Italy, and now Italian *Audace.*

4 Amatsukaze Class.

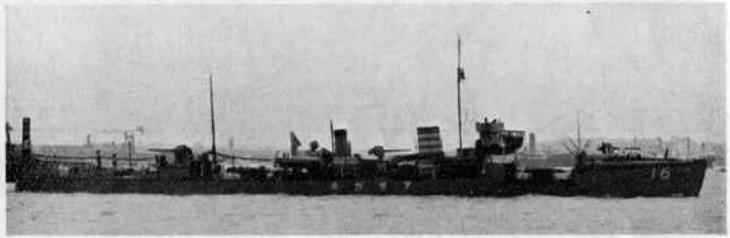
AMATSUKAZE. 1921 *Photo, Navy Dept., Tokyo.*

4 *Amatsukaze* class: ***Amatsukaze*** and ***Isokaze*** (both launched at Kure, Oct., 1916), ***Hamakaze*** (Nagasaki, Oct., 1916), and ***Tokitsukaze*** (Kobé, Dec., 1916).* 1105 tons. Dimensions: 310 (*p.p.*), 326½ (*o.a.*) × 28 × 9½ feet. Armament: 4—4.7 inch (40 cal.), 2 M.G., and 6—18 inch tubes in 3 twin deck mountings. 1 searchlight. Machinery: 3 sets Parsons turbines and Kansei boilers. Designed H.P. 27,000 = 34 kts. Fuel: 145 tons coal + 195 tons oil. Endurance: 4000 miles at 15 kts. Complement, 145. Built under the 1915 Naval Programme.

**Note.*—*Tokitsukaze* wrecked; salved in three sections, March, 1918, and practically rebuilt at Maidzuru D.Y.

2nd Class Destroyers. (1000 to 600 tons).

7 Wakatake Class.



ASAGAO. 1931 *Photo.*

8 *Wakatake class:* ***Wakatake*** (ex-No. 2) and ***Kuretake*** (ex-No. 4), (both by Kawasaki Co., Kobe); ***Sanaye*** (ex-No. 6 by Uraga Dock Co.); ***Asagao*** (ex-No. 10), and ***Yugao*** (ex-No. 12), (both by Ishikawajima Co.); ***Fuyo*** (ex-No. 16) and ***Karukaya*** (ex-No. 18), (both by Fujinagata Co.).

Built under 1921 Naval Programme. Particulars and general design are the same as *Ashi*, *Kiku* and *Momi* classes on next page, with the exception of displacement, which is increased to 820 tons, and dimensions, 275 × 26½ × 8½ feet. All begun in 1921—22 and completed 1922—24.

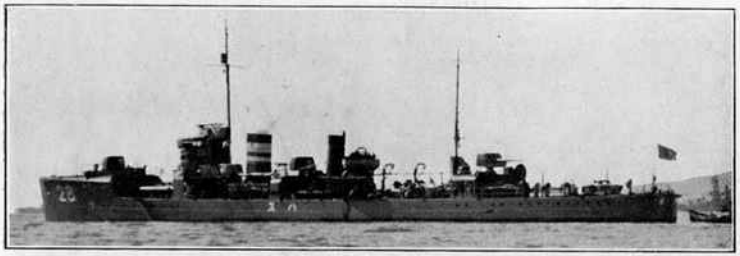
All this class originally bore numbers only. Names were conferred on August 1st, 1928.

Sawarabi lost off Formosa, Dec. 5, '32.

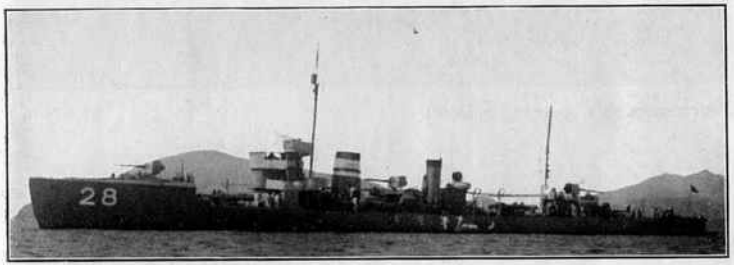
NIRE. – 6 1930 *Photo.*

(*Sanaye*, *Kuretake*, *Wakatake* have raised fore funnel fitted with anti-glare cap.)

19 Kaya Class (12 Kaya + 7 Ashi).



HASU *Photo added* 1927.



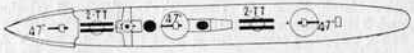
YOMOGI. *Photo added* 1927.

12 *Kaya* class: ***Kaya*** (Yokosuka D.Y.), ***Kuri*** and ***Nire*** (Kure D.Y.), ***Nashi, Take, Aoi*** and ***Kiku*** (Kawasaki Co., Kobé), ***Hagi*** and ***Kaki*** (Uraga Co.), ***Susuki*** and ***Tsuga*** (Ishikawajima Co.), ***Fuji*** (Fujinagata Co., Osaka). 770 tons. Dimensions: 275 (*p.p.*) × 26 × 8 feet. Armament: **3**—4·7 inch, 45 cal., **2** M.G. (AA.). **4**—21 inch torpedo tubes in two twin-deck mountings. 1—30 inch searchlight. Designed S.H.P. 21,000 = 31·5 kts. Machinery: Parsons direct drive turbines. + 3 Kampon boilers. 2 screws. Oil: 275 tons. Endurance: 3,000 miles at 15 kts. Complement, 110. Built under 1918-19 Programme.

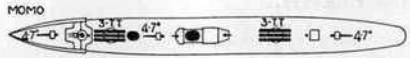
7 *Ashi* class: ***Ashi*** and ***Tsuta*** (Kawasaki Co.), ***Hasu*** and ***Hishi*** (Uraga Dock Co.), ***Sumire*** and ***Yomogi*** (Ishikawajima Co.), ***Tade*** (Fujinagata Co., Osaka). All details as *Momi* class, but 2 searchlights carried. Begun under 1920 Naval Programme.

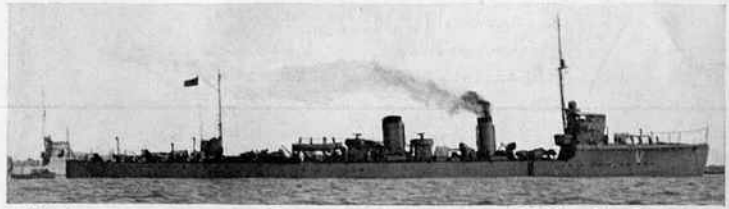
Note.—*Warabi*, of this class, lost by collision, 24th Aug., 1927. *Fuji*, in the above case, means *Wistaria*.

Momi scrapped, 1932.



8 Momo Class.





YANAGI. 1920 *Photo, Seward, Weymouth.*

8 *Momo* class: ***Maki*** and ***Keyaki*** (Sasebo D.Y., 1918), ***Kuwa*** and ***Tsubaki*** (Kure D.Y., 1918), ***Yanagi*** (1917) and ***Momo*** (1916), both built at Sasebo; ***Kashi*** (1916) and ***Hinoki*** (1916), both built at Maidzuru. 755 tons. Dimensions: 275 (*o.a.*) × 25 × 7¾ feet. Armament: **3**—4·7 inch, **2** M.G., **1** small AA. gun, and **6**—18 inch tubes in two triple mountings. One searchlight. Machinery: 3 sets Curtis turbines and 4 Kansei boilers. Designed H.P. 16,000 = 31·5 kts. Fuel: 92 tons coal + 212 tons oil. Complement, 109. The first six provided for by Special 1917 Programme. The last four built under the 1915 Naval Programme. ***Enoki*** and ***Nara*** of this class converted into Mine Sweepers, 1930.

4 Torpedo Boats.

4 *Chidori* class: ***Chidori*** and ***Tomotsuru*** (Maizuru Minor Naval Works), ***Hatsukari*** and ***Manazuru*** (Fujinagata S.B. Yd.).

Building under the 1931 Programme. Laid down 1931.

Displacement: 527 tons.

Dimensions: 253·9 × 23·8 × 5·8 feet (77·4 × 7·3 × 1·8 m.).

Guns: **3**—5" (12·7 cm.), **1** M.G.

Tubes: **4.**

Machinery: . H.P. 7,000 = 26 kts.

S/M. CHASERS AND MINESWEEPERS.

Submarine Chasers.

No. 1 (Ishikawajima, Jan, 1934), ***No. 2*** (Uraga Dock Co.).

Displacement: 300 tons.

Dimensions: { 209·9 × 19·6 × 4·8 feet. / 64 × 6 × 1·5 metres.

H.P. 3,400 = 24 kts.

Armed with Depth Charges and M.G.

Minesweepers.

No. 13 (Fujinagata S.B. Co., 1932).

No. 14 (Osaka Works, 1932).

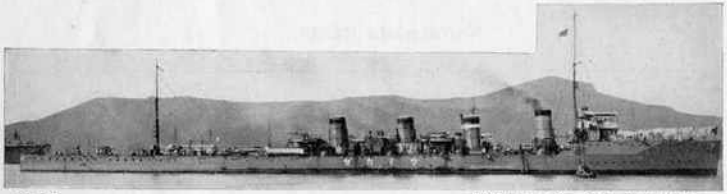
Displacement: 492 tons.

Dimensions: { 232·2 × 24·6 × 5·8 feet. / 70·8 × 7·6 × 1·8 metres.

Guns: 2—4·7", 2 M.G.

H.P. 3,200 = 20 kts.

2 ex-Umikaze Class.



No. 7. 1921 *Photo, Navy Department, Tokyo.*

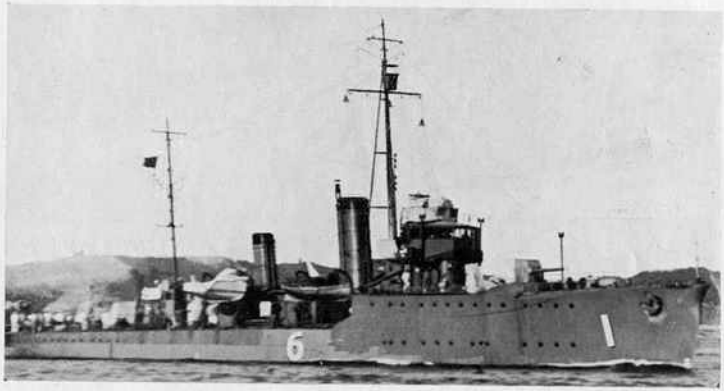
No. 7 (***ex-Umikaze***) (Maidzuru, 1910) and ***No. 8*** (***ex-Yamakaze***) (Nagasaki, 1911). 1030 tons. Dimensions: 310 (*p.p.*) 323½ (*o.a.*) × 27½ × 9 feet (*mean* draught). Armament: 1—4.7 inch (40 cal.), 4—12 pdr. Torpedo tubes: removed. 1 searchlight. Machinery: 3 sets Parsons turbine and Kansei boilers. Designed H.P. 19,500 = 31.5 kts. Fuel: 250 tons coal + 180 tons oil = 2700 miles at 15 kts. Complement, 139. Trials: *Umikaze* 33.46 kts. Converted into minesweepers, April, 1930.

2 ex-Momo Class.

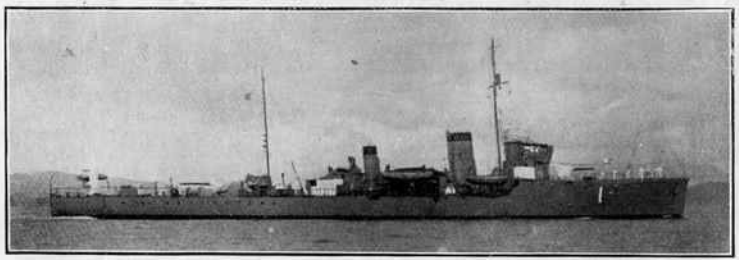
***Nara* = No. 9.**
***Enoki* = No. 10.**

(Details, see p. 343)

Minesweepers—*continued.*



MINESWEEPER No. 6. (note tripod foremast). 1930 *Photo.*



MINESWEEPER No. 1. *Photo added* 1927.

Nos. 1 (Kobe Steel Works, March, 1923), **2** (Tama Works, 1923), **3** (Osaka Iron Works, 1923), **4** (Sasebo, 1923), **5,** and **6** (both Sasebo, Oct., 1928). All provided by 1920-28 Fleet Replenishing Law. 615 tons. 235 × 26½ × 7½ feet. Guns: 2—4·7 inch, 2—3 inch AA. 2 D.C. throwers. Complement, 87. Triple expansion engines. 3 Kampon boilers. H.P. 2000=20 kts.

67 Submarines. (*Sensuikan*).

1st class boats, over 1,000 tons surface displacement—**26** + 5 *building*.

2nd class boats, under 1,000 tons—**36**

Details, all types, officially revised by Navy Dept., Tokyo, 1929, and can be considered as fairly reliable. All 5 and 6-tube boats are believed to carry 10 torpedoes; others carry from 4 to 6, except Ro. 51—68, which have 8 or 10, and non-minelaying 1st class boats, which may carry more still. Recently the patents of two German patterns of periscope (Goerz and Humbrecht) were acquired.

The 1st class submarines are subdivided into following categories:—

Fleet (I 1—5), Cruising (I 51—67), Minelaying (I 21—24).

First Class Submarines
(over 1,000 tons)

Building.

1 *boat* : ***I 6*** (Kawasaki D.Y.). 1,970 tons.

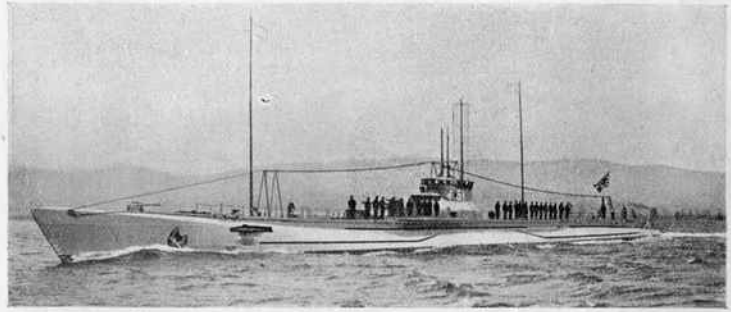
Building.

4 *boats* : ***I 68*** (Mitsubishi, Kobe), ***I 69*** (Kawasaki, Kobe), ***I 70*** (Sasebo), ***I 71*** (Kure) + 2 projected. Displacement : 1,400 tons.

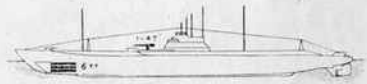
(Numbers and builders not yet confirmed.)

First Class Submarines—*continued*.

3 Kaigun Type.



Appearance as I.61. above. *Photo, Navy Dept., Tokyo.*

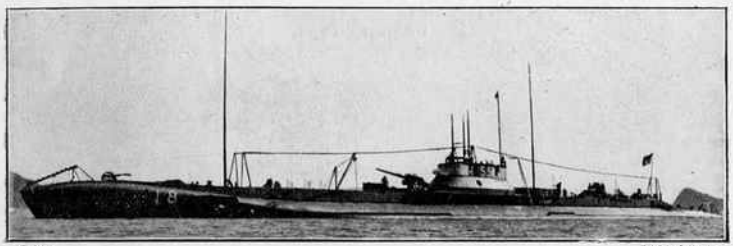


3 *boats* : ***I 65*** (Kure, June, 1931), ***I 66*** (Sasebo, June, 1931), ***I 67*** (Mitsubishi, July, 1931). Dimensions : 320·4 × 25· × 16 feet. Displacement : 1,638/2,100 tons. Guns : 1—4", 6—21" tubes. 2 sets Diesels = H.P. 6,000. Speed, 19 kts.

SUBMARINES.

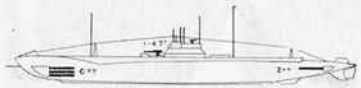
First Class Submarines—*continued.*

12 Kaigun Type.



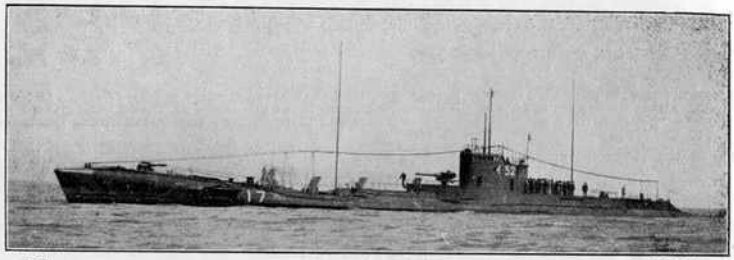
I 55. 1928 *Photo.*

I 60. 1931 *Photo, Official.*



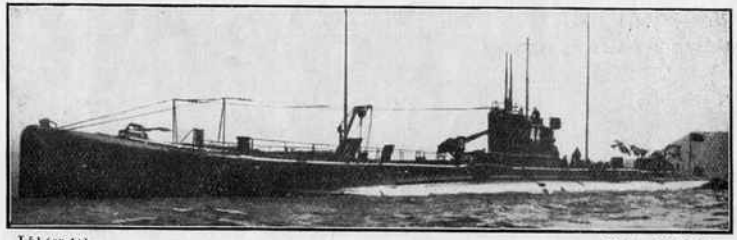
12 boats: ***I 53*** (ex-*No.* 64, Kure, Aug. 5th, 1925). ***I 54*** (ex-*No.* 77, Sasebo, March 15th, 1926). ***I 55*** (ex-*No.* 78, Kure, Sept., 1925), ***I 56*** (Kure, March, 1928), ***I 57*** (Kure, Nov., 1928), ***I 58*** (Yokosuka, Oct. 3rd, 1925). ***I 59*** (Yokosuka, March 25th, 1929). ***I 60*** (Sasebo, April 24th, 1929), ***I 63*** (Sasebo, Sept, 28th, 1927). ***I 61*** (M.B.Z.K. Kobe, Nov. 12th, 1927), ***I 62*** (M.B.Z.K., Nov. 25th, 1928), ***I 64*** (Kure, Oct. 5th, 1929). Dimensions: *I 53–55*, 330 × 26 × 16¼ feet. *I 56–60* and *I 63*, 331¼ × 26 × 16¼ feet. Armament: 1—4.7 inch. 1—3 inch AA., 8—21 inch tubes. Machinery: Diesels, B.H.P. 2 × 300/motors, 1,800 H.P. Speed: 19/9 kts. Believed begun under 1923-25 Programmes. Cruising radius is undoubtedly very large, 16,000 miles being spoken of. They are supposed to be capable of crossing the Pacific and returning without refuelling. This design is the fruit of experience gained with *I* 51 and *I* 52.

2 Kaigun Type.

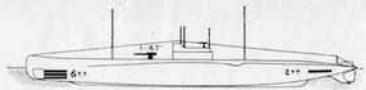


I 52. 1926 *Photo.*

I 52 (ex-*No.* 51, Kure, June, 1922). Laid down under 1920 Programme. Displ. 1,390/2000 tons. Dimensions: 330 × 25 × 17 feet. Armament: 1—4·7", 1—3" AA., 8—21" tubes. H.P. 6,000/1,800. Speed: 19/9 kts. Completed in May, 1925.

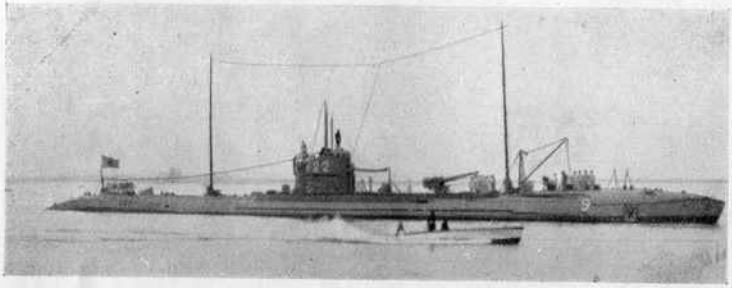


I 51 (ex-44). *Photo added* 1927.

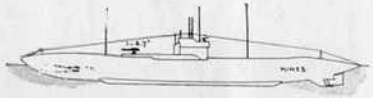


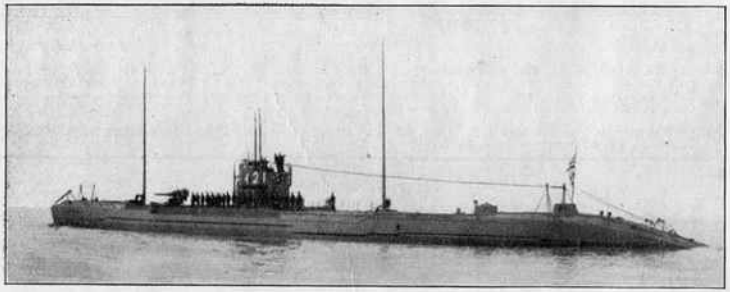
I 51 (ex-*No.* 44) Kure, Nov. 29th, 1921). Laid down under 1920 Programme as an experimental boat. Displacement: 1390/2000 tons. Dimensions: 300 × 28 × 15½ feet. Armament: 1—4·7", 1—3" AA., 8—21" tubes. Diesels 2 × 3,000/1,800 = 19.9 kts. Completed June, 1924.

4 Kawasaki Boats (Minelayers).



I 22. 1930 *Photo.*

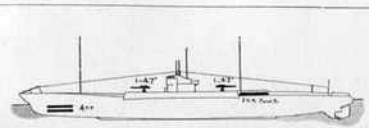




I 21. 1927 *Photo, by courtesy of Navy Dept.*

4 boats: ***I 21*** (March 30th, 1926), ***I 22*** (Nov. 8th, 1926), ***I 23*** (March, 1927) (ex-*Nos.* 48—50), ***I 24*** (Nov. 12th, 1927), all by Kawasaki Co., Kobe, the first probably laid down under 1919 Programme. Displ.: 1142/1750 tons. Dimensions: 280 × 24½ × 14½ feet. Armament: 1—5.5 inch, 42 mines. *I* 22 and *I* 23 completed at Kure, owing to temporary suspension of business by Kawasaki Yard. Construction of *I* 24 completed at Kawasaki by Naval Construction Dept. Design believed to be based on German *U B* types. Machinery: Diesels, H.P. 4,000 = 14/10 kts.

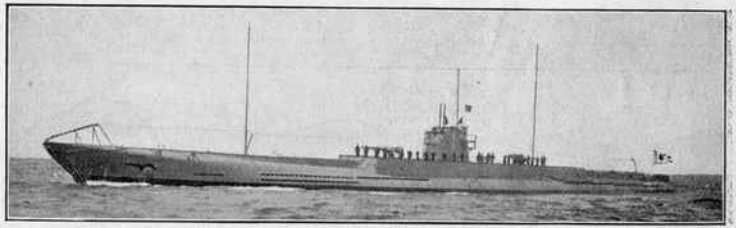
1 Experimental Boat.



Differs only from I 1—4 in having above water Tubes at the sides in the stern section.

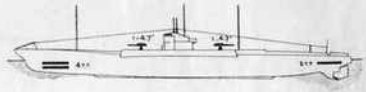
I 5. (Kawasaki, June 19th, 1931). Displ.: 1955 tons. Dims.:—320 × 30·1 × 15·7 feet. Guns: **2**—5·5 inch. Tubes: **6**—21 inch. Machinery: Diesels, 6,000 H.P. = 17 kts. surface.

4 Kawasaki Boats.



I 1. 1926 *Photo, by courtesy of Navy Department.*

4 boats: ***I 1—3*** (ex-*Nos.* 74—76) (Kawasaki Co., Kobe, 1924-25), ***I 4*** (May 22nd, 1923). *I 5 (building).* Displacement: $\frac{1,925}{2,618}$ tons. Dimensions: 320 × 29½ × 16 feet. Guns: **2**—5.5 inch. Tubes: **6**—21 inch. Design is based in its main features on the ex-German Submarine *O 1* (ex-*U* 125). First three authorised by 1922 Programme. *I* 1 launched Oct., 1924, *I* 2, 23/2/1925, *I* 3, 8/6/1925; all completed 1926. *I* 1 carried out a test cruise of 2500 miles with complete success. A small seaplane with collapsible wings has been carried as an experiment in this class. *I* 4, laid down at Kawasaki, in April, 1926, built under direct superintendence of Naval Construction Department. Machinery: Diesels, H.P. 6,000 = 17 kts surface.

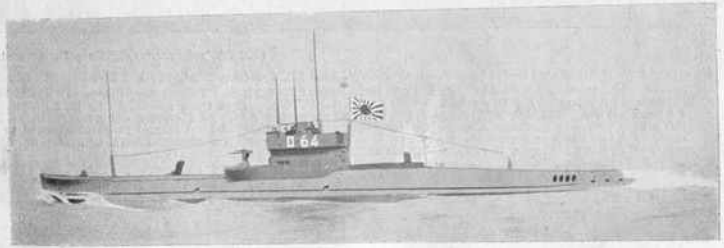


SECOND CLASS SUBMARINES (from 500 to 1000 tons).

9 Mitsu Bishi Type.

Ro. 60. *Photo added* 1926.

Ro. 62. *Photo added* 1926.



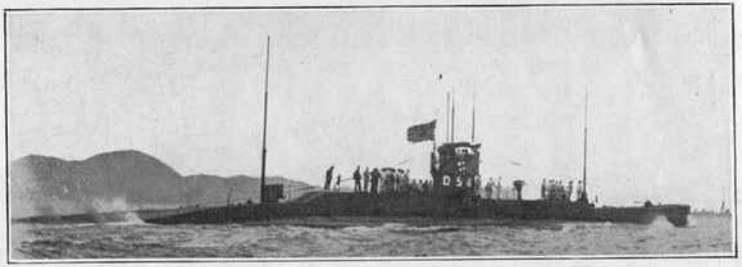
Ro. 64. 1926 *Photo, by courtesy of Navy Department.*

9 boats: ***Ro. 60*** (ex-*No.* 59), ***Ro. 61*** (ex-*No.* 72), ***Ro. 62*** (ex-*No.* 73), ***Ro. 63*** (ex-*No.* 84), ***Ro. 64–68***. All built by M.B.Z.K., Kobe, 1923-25. Displ.: 908/1300 tons. Dim.: 250 (*p.p.*) × 24 × 13 feet. Guns: 1—3 inch AA., 1 M.G. Torpedo tubes: **6**—21 inch. 2 sets of 1200 B.H.P. 12-cylinder Vickers type Diesel engines. Motors: 1500 H.P. Speed: 16/10 kts. Compl.: 48.

Notes.—Built under 1920-22 Programmes. Apparently an enlargement of the *Ro.* 51—59 type. Completed—*Ro.* 60, 1923; *Ro.* 61—63, 1924; *Ro.* 64 and 68, 1925; *Ro.* 65—67, 1927.

8 Mitsubishi–Vickers type.

Ro. 58. (*Ro.* 57 and 59 same.) (Note absence of step forward.) *Photo added* 1926.



Ro. 54. *Photo added* 1927.

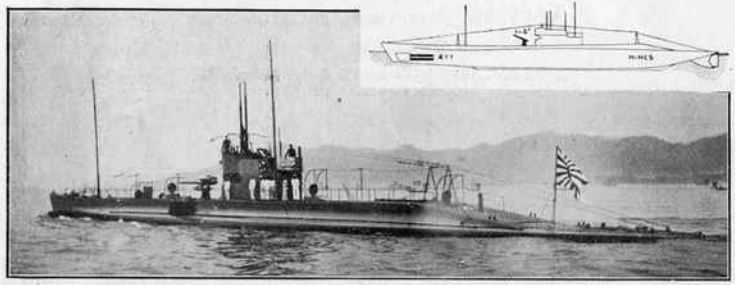
8 boats: ***Ro. 51*** (ex-*No.* 25), ***Ro. 53–56,*** (ex-No. 30), ***Ro. 57*** (ex-*No.* 46), ***Ro. 58*** (ex-*No.* 47), ***Ro. 59*** (ex-*No.* 57). (M.B.Z.K. Co., Kobé, 1919—22). Displ.: 900/1082 tons. Dimensions: 231½ × 23¾ × 13 feet. Guns: **1**—3 inch HA. Torpedo tubes: **6**—18 inch in *Ro.* 51—56; **4**—21 inch in *Ro.* 57—59. H.P. 2400/1200=Speed 17/10 kts. Compl.: 48. Endurance: *About* 7500 miles *on surface.*

Notes.—Gun mounted on extended C.T. in *Ro.* 57—59. Begun under 1917-18 and 1919 Programmes. Completed 1920-23. *Ro.* 52 scrapped April, 1932.

New Construction.

2 boats of 900 tons are to be built, or have already been laid down.

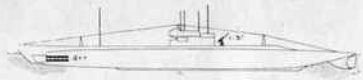
4 Kawasaki Boats (Minelayers).



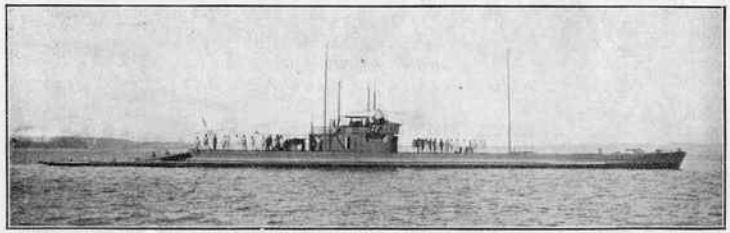
Ro. 29. 1926 *Photo, by courtesy of Navy Department.*

4 boats: ***Ro. 29—32*** (ex-*Nos.* 68—71). (Kawasaki Co., Kobe, 1922-23). Dim.: 243½ (*p.p.*) × 20 × 12 feet. Displ.: 665/1000 tons. Guns: 1—4 inch AA., 1—3 pdr. Torpedo tubes: Originally carried 5—21 inch, now 4—21 inch, and are fitted as minelayers. H.P. 1200/1200 = 13/10 Kts.

Notes.—Built under 1919 Programme, and completed 1923-24. Understood to be a Kawasaki modification of *Ro.* 16—24 design, with certain improvements. *Ro.* 29 was completed Oct., 1923; *Ro.* 31 (ex-*No.* 70) sank during trials at Kobe, August, 1923, but was salved and rebuilt. *Ro.* 30 and *Ro.* 32 both completed during 1924-25. *Ro.* 31 completed at Kure, 1927, owing to financial crisis at Kawasaki Yard.



3 Kaigun Type.

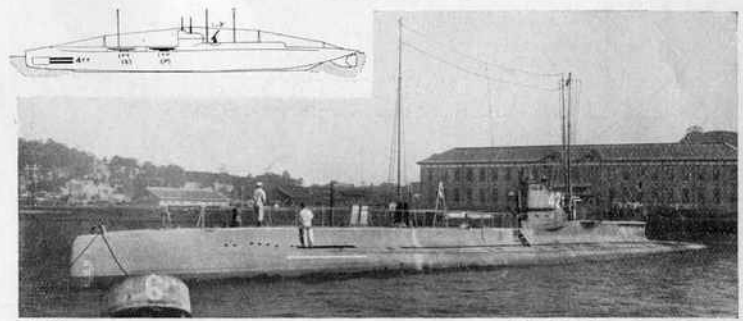


Ro. 26. 1926 *Photo, by courtesy of Navy Department, Tokyo.*

3 boats: ***Ro. 26*** (ex-*No.* 45, Sasebo, 1921), ***Ro. 27*** (ex-*No.* 58, Yokosuka, 1922), ***Ro. 28*** (ex-*No.* 62, Sasebo, 1922). Displ.: 746/1000 tons. Dim.: 230 × 20 × 12 feet. Guns: 1—3". Torpedo tubes: 4—21" 2 sets of 1300 B.H.P. Sulzer Diesel engines=2600/1200. Speed: 16/10 Kts. Compl. 40.

Notes.—Built under 1919 Programme and completed 1922-24. An improvement of the *Ro.* 16—24 design.

10 Kaigun type.



Ro. 24. 1923 *Photo, Navy Dept., Tokyo.*

10 boats: ***Ro. 16*** (ex-*No.* 37) (Kure), ***Ro. 17—19*** (ex-*Nos.* 34—36) (Kure), ***Ro. 20—23*** (ex-*Nos.* 38—41) (Yokosuka), ***Ro. 24*** (ex-*No.* 42) ***Ro. 25*** (Sasebo). Displ.: 735/986 tons. Dim.: 230 × 20 × 12 feet. Guns: 1—3 inch. Torpedo tubes (18 inch): 4 bow and 2 beam. H.P. 2600/1200 = 17/10 Kts. Compl. 45. Oil: 75 tons = 11,000 miles endurance at cruising speed *on surface.*

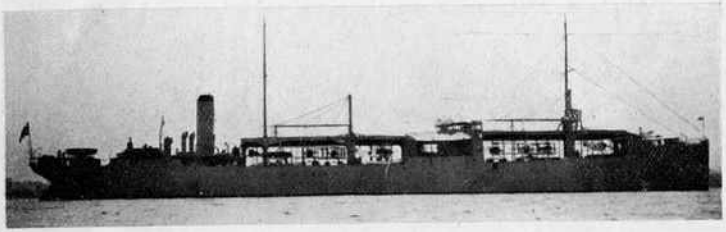
Notes.—Built under 1918-19 Naval Programme. Completed 1921-22. *Ro.* 25 (ex-*No.* 43), built at Sasebo, foundered in March, 1924, and though salved, was so badly strained that she was utilised for experimental purposes. Again included in the effective list 1933.

2 Kaigun type. (Modified Laubeuf).

Ro. 14. *Photo, Navy Dept., Tokyo.*

2 *Kaigun* type: ***Ro. 14*** (ex-*No.* 22, 31st March, 1919), ***Ro. 15*** (ex-*No.* 24, Oct., 1920). Displ.: 740/986 tons. Dim.: 220 × 20 × 12½ feet. Guns: 1—12 pdr., 1—3 pdr. Torpedo tubes: 6—18 inch. H.P.: 2600/1200 =17/10 Kts. Compl. 45.

Aircraft Tenders.



1932 *Photo.*

NOTORO (Kawasaki Co., Kobe, May, 1920).
Displ.: 15,243 tons (8,000 tons *gross*).
Dims.: 470·8×58×26·5 feet.
Guns: 2—5·5", 2—3" AA.
Reciprocating engines. H.P. 3,750 = 12 kts.
Fuel: 1,000 tons. Compl.: 155.

Converted from a tanker of the *Erimo* class (p. 357).

KAMOI.

KAMOI (New York S.B. Co., completed 12 Sept., 1922). Displ.: 19,550 tons (10,222 tons *gross*). Dims.: 495 (w.l.), 478½ (*p.p.*)×67¼×28 feet. Guns: 2—4·7", 2—3" AA. S.H.P. 8,000 = 15 kts. Machinery: G.E. (Curtis) turbines and electric drive. Boilers: 4 Yarrow. Fuel: 2,500 tons coal.

Converted from a tanker 1932-33.

Minelayers.

YAEYAMA (Kure, October 15, 1931).

Displ.: 1,135 tons (Standard).

Dims.: 280·4×34·4×7·8 feet. Compl., 150.
85·3×10·5×2·4 metres.

Guns:

2—4·7 inch AA.

2—M.G.

Mines:

YAEYAMA. 1933 *Photo, Official.*

Machinery.—2 Reciprocating=4,800 H.P. Speed, 20 kts. 2 boilers.

New Construction.

1 VESSEL, 5,000 tons. Building at Asano D.Y.
and
NATSUSHIMA (Ishikawajima S.B.Y.).
ENTO (Yokohama D.Y.)
NASAMI (Harima S.B.Y.).

Displacement: 443 tons.

Dimensions: 225×24·2×5·4 feet. / 68·6×7·47×1·7 metres.

Guns: 2—3"/8 cm.
1—M.G.

H.P. 2,300=19 kts.

ITSUKUSHIMA (May 22nd, 1929).

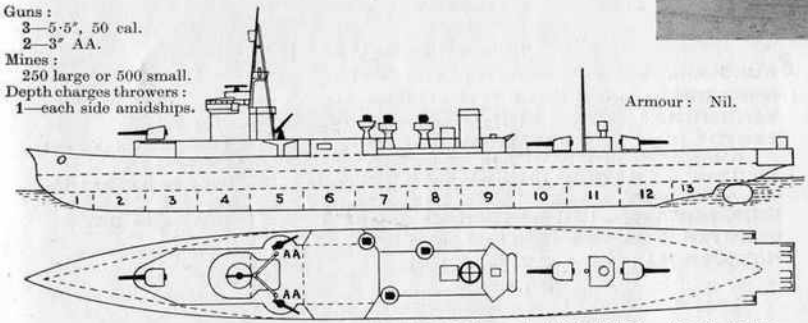
Laid down at Uraga Yard early in 1928. Completed Dec., 1929.

Standard displacement, 1,970 tons; *normal*, 2,020 tons.

Dimensions, 328 × 42 × 10 feet. Complement, 235.

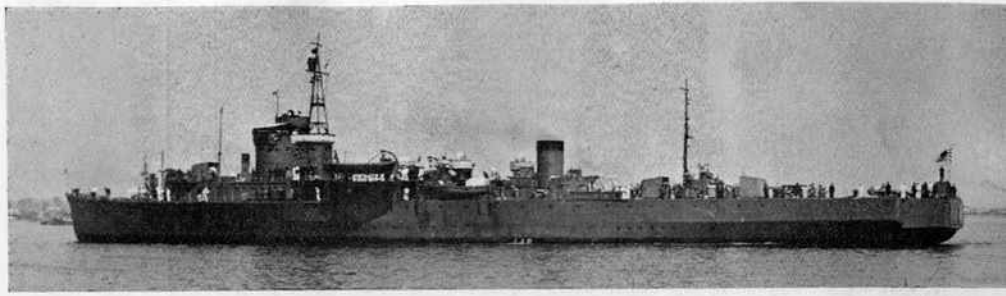
Guns:
3—5·5″, 50 cal.
2—3″ AA.
Mines:
250 large or 500 small.
Depth charges throwers:
1—each side amidships.

Armour: Nil.



Machinery: Diesel engines. 3 sets of 1,000 B.H.P. each=3,000 B.H.P.; Speed, 17 kts. Radius of action is 5,000 miles at 17 kts. 3 screws.

1930 *Photo.*

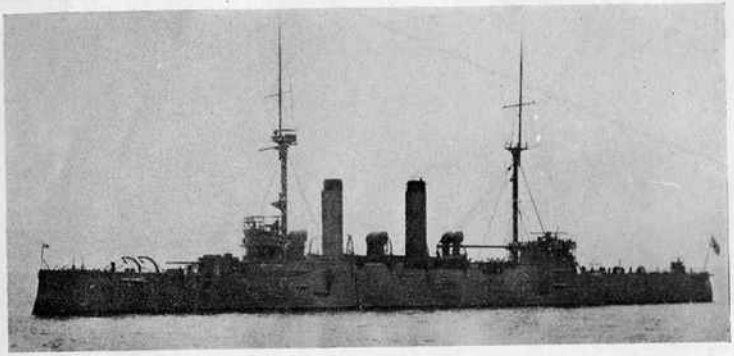


1930 *Photo.*

General Notes.—Is the first experimental Diesel-driven ship in the Japanese Navy. Design suggested by H.M.S. *Adventure* of which she is a small edition. In plan the second S.L. is replaced by an aircraft range finder (2 metre). Officers' cabins in superstructure deck under fore gun and bridge. Upper deck is for mine stowage, 4 lines of mine-laying rails extending from section 2 on plan to stern. Two outer lines start in section 6 and extend to the wing-ports at stern. There is a single line on the forecastle from starboard bow to gun for transport back to store of picked-up practice mines. Two sizes of mines can be carried and number stowed varies as the type—roughly twice as many of the smaller size.

1930 *Photo.*

MINELAYING VESSELS.



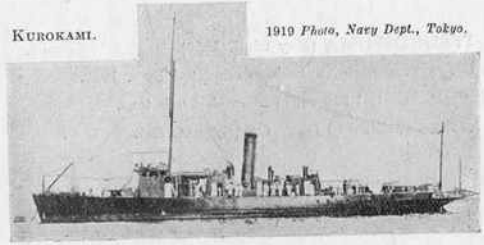
1930 *Photo.*

TOKIWA (Armstrong, July, 1898). 9240 tons. Dimensions: 442 × 67¼ × 24¼ feet. Guns: 2—8″, 40 cal., 8—6″, 40 cal., 13—3″, (some not aboard). All other particulars as Cruiser *Asama* (of which she was originally a sister) on an earlier page.

Note:- *Tokiwa* means Evergreen. After turret removed 1929.

NINOSHIMA. 1933 *Photo.*

Mine Layers, 2nd Class (*Fuseiau tei*).



KUROKAMI. 1919 *Photo, Navy Dept., Tokyo.*

(KUROKAMI CLASS—12 SHIPS.)

KUROSAKI. Built at Yokosuka D.Y. under —— Programme.

NINOSHIMA. Built at Kure D.Y. 1918-19 Programme.

YENOSHIMA.* Built under 1917 Special Programme, at Maidzuru D.Y.

YENTO* (Mar., 1917), **KATASHIMA** (Feb., 1917), both built at Maidzuru D.Y., and **KUROKAMI** (Kure D.Y., Feb., 1917). Built under 1916-17 Programme.

ASHIZAKI and **KATOKU.** Both launched at Maidzuru D.Y., Oct., 1915. Built under 1915–16 Programme.

KUROSHIMA (Oct., 1914) and **TOSHIMA** (Oct., 1914). Both built at Sasebo D.Y.

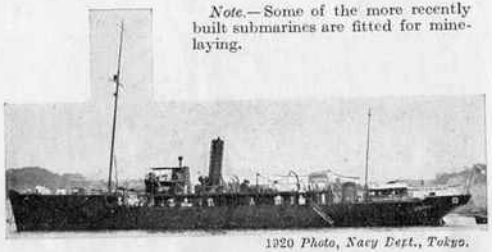
SOKUTEN (March, 1913). Built by Maidzuru D.Y.

NATSUSHIMA (Yokosuka D.Y., March, 1911).

Details of all above ships: 430 tons. Dimensions: 150 × 25 × 7.5 feet. Guns: Not known. H.P. 600 = 12 kts. Unofficially reported to carry 40-50 mines each.

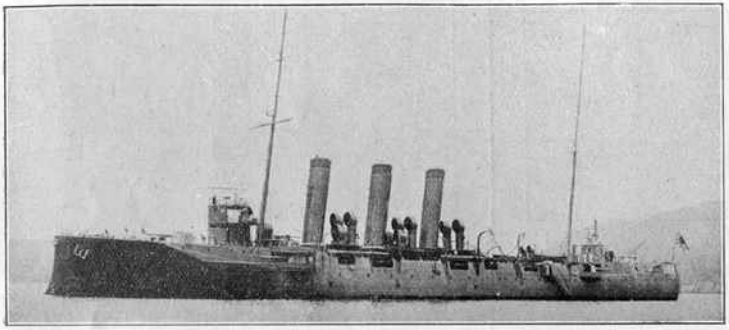
*May also be referred to as *Enoshima* and *Ento*.

Note.—Some of the more recently built submarines are fitted for minelaying.



1920 *Photo, Navy Dept., Tokyo.*

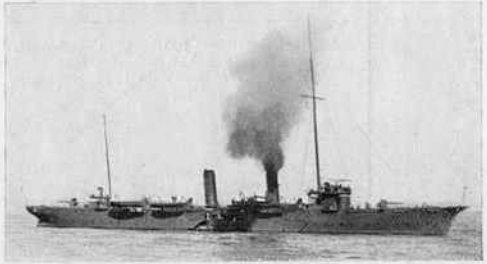
KATSURIKI. (Kure D.Y., Oct., 1916). 1540 tons. Dimensions: 269 × 39 × 14 feet. Guns: 3—4 7 inch. H.P. = 13 kts. Built under 1915-16 Programme. Fitted with 4 gallows for sweeps. Reported to carry 150 mines. First Period expired 1925.



Re-rated as Second Class Coast Defence Vessel, 1921.

ましつ TSUSHIMA.

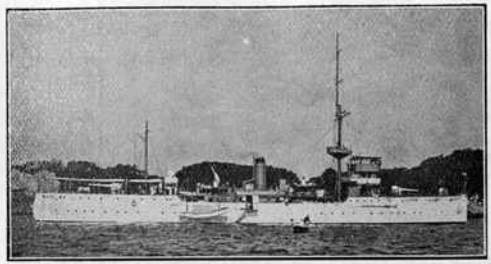
TSUSHIMA (Dec., 1902). *Normal* displacement, 3420 tons. Complement, 311. Length, 334½ feet. Beam, 44 feet. *Maximum* draught, 16 feet. Guns (Armstrong): **6**—6 inch, 40 cal., **8**—3 inch, **1**—3 inch AA. Torpedo tubes: *None.* Armour (steel): 2½″ Deck (Cellulose belt), 4″ Conning tower (K.N.C.). Machinery: 2 sets triple expansion. 2 screws. Boilers: 16 Niclausse. Designed H.P. 9,400 = 20 kts. Coal: *normal,* tons; *maximum,* 600 tons. Laid down 1900 at Yokosuka and Kure. Completed 1904. Third Period expired 1928. An excellent steamer. Sister ships, *Otowa,* wrecked 1917, and *Niitaka,* lost Aug., 1922.



1921 *Photo, Navy Dept., Tokyo.*

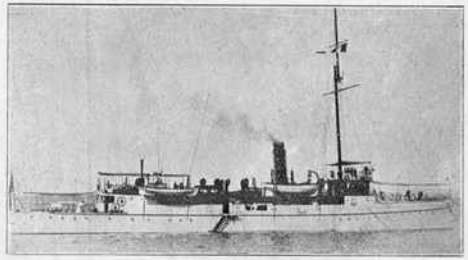
よど **YODO** (Kobe, 1907). 1320 tons. Comp., 182. 280 (*p.p.*) 305½ (*o.a.*) × 32 × 11 feet. Guns: **2**—4.7 inch, 50 cal., **4**—12 pdr. Armour: 2½″ deck. Torpedo tubes: **2**—18 inch. Machinery: 2 sets 4-cyl. triple expansion. Designed H.P. 6500 = 22 kts. Boilers: 4 Miyabara. Coal: *normal,* tons; *maximum,* 340 tons + 80 tons oil. In Third Period. Completed April, 1908. Employed recently in Surveying Service. Standard displacement is 1320 tons.

1st Class Gunboats (*Itto Hokan*). (Over 800 tons.)



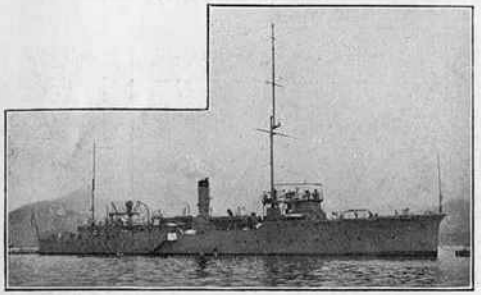
ATAKA. 1924 *Photo, by courtesy of the Ministry of Marine.*

ATAKA (Yokohama Dock Co., August, 1921). 725 tons. Complement, 118. Dimensions: 222 × 32 × 7½ feet. Guns: **2**—4.7 inch, **2**—3 inch AA. Machinery: Triple expansion. Designed H.P. = 16 kts. Boilers: 2 Kampon. Authorized under 1920-28 Fleet Law, laid down 1921, and completed 1922. In First Period. It is reported that this vessel has been specially equipped for submarine salvage work.



UJI (1903). 540 tons. Complement, 86. 180½ × 27½ × 7 feet. Armament: **4**—12 pdr., **6** M.G. H.P. 1000 = 13 kts. Belleville boilers. Coal: 150 tons. Built at Kure D.Y. Third Period expired 1927.

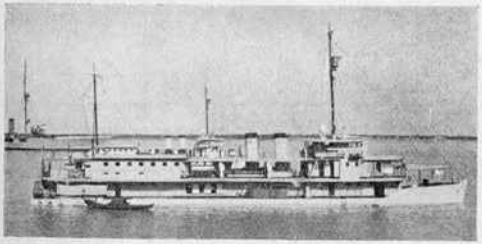
2nd Class Gunboats (*Nito Hokan*). (Under 800 tons.)



1918 *Photo, by courtesy of the Navy Department.*

SAGA (Sasebo, 1912). 710 tons. Complement, 99. 210×29½×7½ feet. Guns: **1**—4·7 inch, **3**—3 inch AA., **6** M.G. Machinery: Triple expansion, 3 screws. Boilers: 2 Kampon. Designed H.P. 1600=15 kts. Coal: *maximum* 400 tons. In Third Period. Completed Nov., 1912.

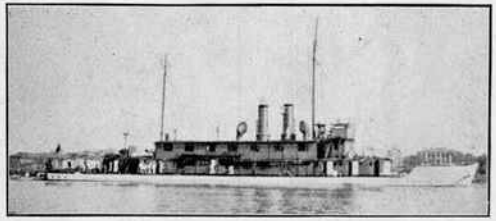
River Gunboats.



FUTAMI. 1930 *Photo, Lt. Malcolm Burnett, R.N.*

ATAMI (March 30th, 1929), **FUTAMI.** Both laid down 1928, by Tama Works and Fujinagata Co., respectively. Displacement: 170 tons. Dimensions: 148⅜ × 22¼ × 3 feet. Guns: **1**—3 inch AA., **6** M.G. Speed: 16 kts. Machinery: 2 sets triple expansion. Boilers: 2 Kampon. Completed 1930.

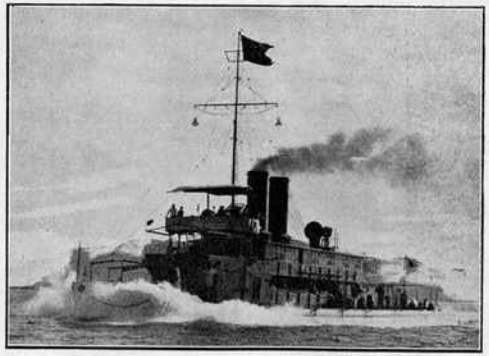
River Gunboats—*continued.*



KATATA. *Photo added* 1925.

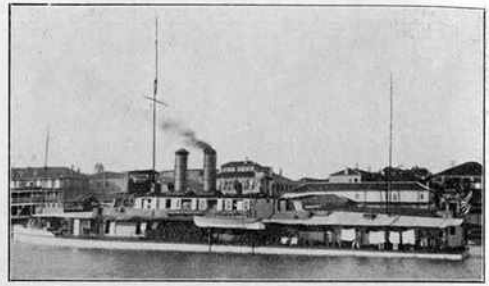
Name.	*Builder.*
HIRA (1922) **HODZU** (1922)	Mitsu Bishi, Kobe.
KATATA (1923) **SETA** (1923)	Kobe Steel Works.

Displacement, 305 tons. Dimensions: 180 × 27 × 3½ feet. Guns: **2**—12 pdr., **6** M.G. Machinery: 2 sets triple expansion. Boilers: 2 Kampon. Designed H.P. 2100=16 kts. In First Period.
Authorised under 1920-28 Fleet Law. Laid down 1922 and completed 1923.

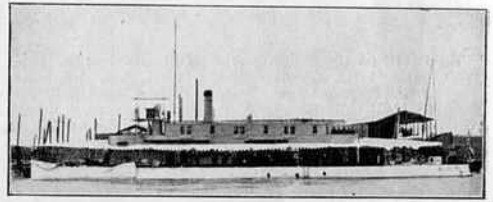


TOBA (1911). 215 tons. Complement, 59. 180 × 27 × 2½ feet. Guns: **2**—12 pdr., **6** M.G. 1100 H.P. = 15 kts. Coal: 80 tons. Built at Sasebo D.Y. In Third Period.

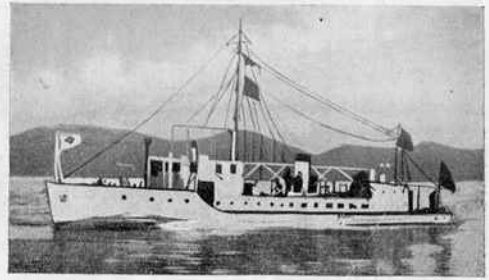
River Gunboats—*continued.*



FUSHIMI (1906). 150 tons. Complement, 45. 160×24½×2½ feet. Guns: **2**—6 pdr., **6** M.G. 800 H.P.=14 kts. Yarrow boilers. Coal: 25 tons. Built by Yarrow, at Poplar. In Third Period.



SUMIDA (1903). 105 tons. Complement, 40. 145×24×2 feet. Guns: **2**—6 pdr., **6** M.G. 600 H.P.=13 kts. Thornycroft boilers. Coal: 40 tons. Built by Thornycrofts, at Chiswick. Third Period expired 1927.

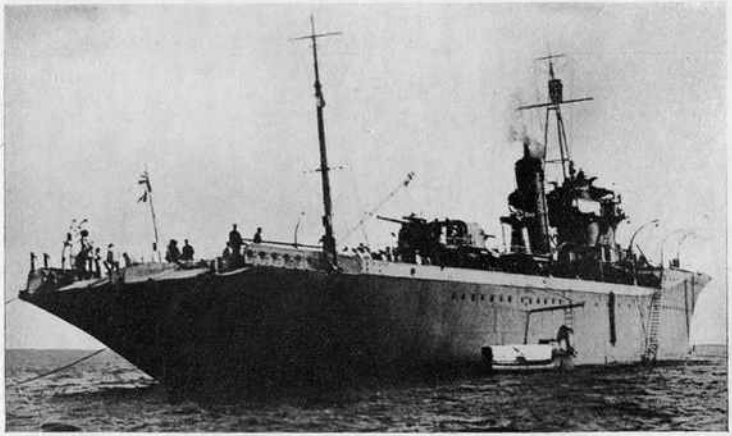


KOTAKA (1929) 55 tons. 100 × 16 × 4·5. Guns: **5** M.G. H.P. = 15 kts. Laid down September, 1929, at Tama works, and completed January, 1930.

Anti-Submarine Net Layers.

1930 *Photo.*

SHIRATAKA (Ishikawajima Co., Tokyo, 25th January, 1929). Displacement: 1345 tons *standard*; 1405 tons *normal*. Dimensions: 260 × 38 × 9 feet. Guns: **3**—4.7 inch A.A., **1** M.G. Machinery: 2 sets triple expansion. Boilers: 2 Kampon. Speed, 16 kts.



SHIRATAKA. 1930 *Photo.*

TSUBAME. 1931 *Photo.*

Kamome similar. (2 white bands on funnel.)

TSUBAME (now has 1 white band on funnel). 1930 *Photo, Navy Dept., Tokyo.*

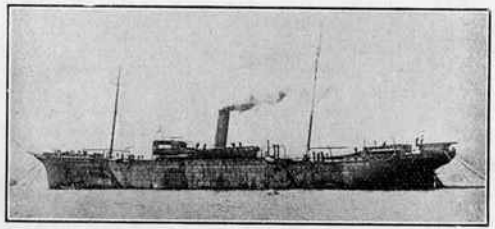
KAMOME (Osaka Ironworks, 27th April, 1929), **TSUBAME** (Yokohama Dock Co., 24th April, 1929). Displacement: 450 tons *standard*, 570 tons *normal*. Dimensions: 206⅞ × 23½ × 6¼ feet. Guns: **1**—3 inch. Speed: 19 kts.

Notes.—*Shirataka* laid down 24th November, 1927; other two in 1928. Meanings of these three names are as follows: *Shirataka*—White Hawk. *Kamome*—Seagull. *Tsubame*—Swallow.

Destroyer Depot Ships
(Sui rai Bokan).

1917 *Photo, by courtesy of the Navy Department, Tokyo.*

KOMAHASHI. (Sasebo, 1913.) 1,230 tons. 227 × 35 × 17¾ feet. Guns: **2**—12 pdr., **1**—3 inch AA. H.P. 1824 = 13.9 kts. Was originally built as a Naval Transport.



KARASAKI (ex-*Ekaterinoslav*, 1896, captured 1904). 6,170 tons. Dimensions: 440 × 49½ × 15¾ feet (*max.* draught). Armament: **1**—12 pdr., **1**—3 inch AA., **1**—3 pdr. H.P. 3200 = 13 kts.

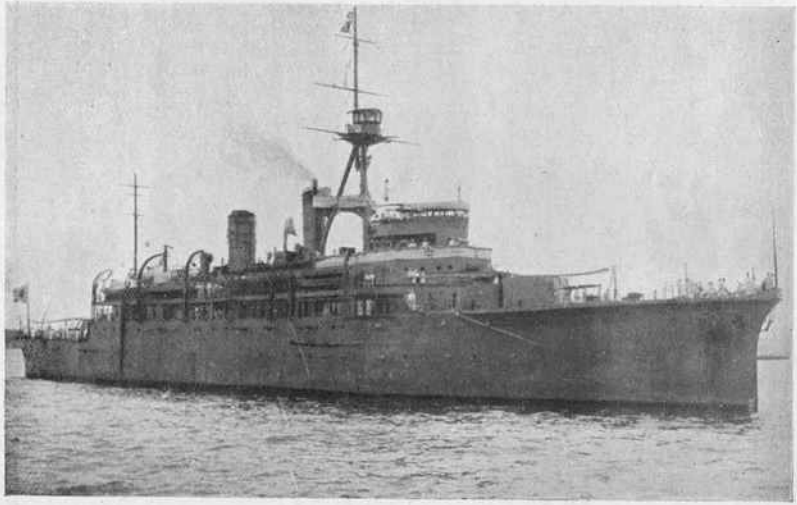
Submarine Depot Ship.

Building at YOKOSUKA

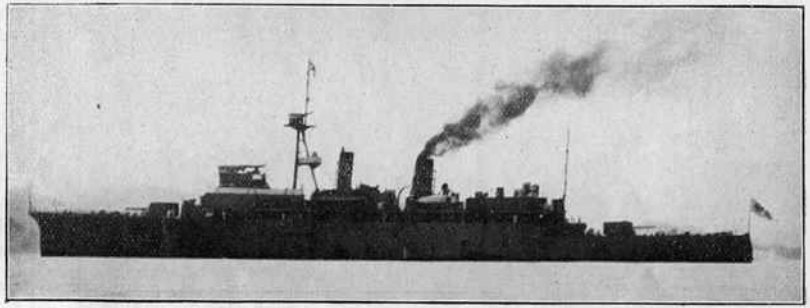
TAIGEI.* (Laid down Apl. 12th 1933, launched Nov. 16th.)
Displacement: 10,000 tons.
Dimensions: { 688.9 × 59 × 16.4 feet. / 210 × 18 × 5 metres.
Guns: **4**—5 inch (12.7 cm) AA.
H.P. 13,000 = 20 kts.
To carry 3 seaplanes.

* Big Whale.

Submarine Depot Ships *(Sensui Kan Botei).*



JINGEI. 1931 *Photo.*



CHOGEI. *Photo added 1926.*

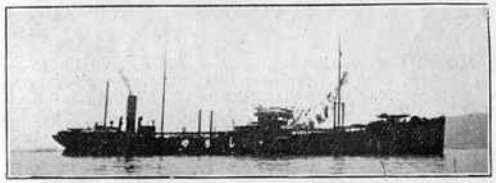
JINGEI (May, 1923), **CHOGEI** (24th March, 1924). Both by Mitsu Bishi Co., Nagasaki. 8500 tons. Dimensions: 380 × 53¼ × 19¼ feet. Turbine engines. 2 screws. *Jingei*, 6 Kampon boilers; *Chogei*, 5. H.P. ? = 16 kts. Guns: **4**—5.5 inch, **2** M.G. 2 searchlights. Equipped to carry 1 seaplane.

Note.

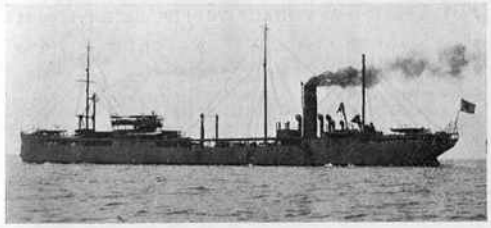
All Vessels listed on this page are officially rated as Naval Storeships and Transports (*Unsokan*), and are grouped with various other auxiliaries under the general classification of "Special Service Ships (*Tokumukan*)."

Oilers & Tank Vessels.*

*This is not an official Rating. These ships are included in the general classification of "Naval Transports and Storeships (*Unsokan*)."



SHIRIYA. *Photo added* 1927.



NARUTO. 1932.

IRO, SHIRIYA, TSURUMI, NARUTO, HAYATOMO, ONDO, SATA, ERIMO and **SHIRETOKO.**

Displacement: 15,243—15,450 tons. (8000 tons *gross.*) Dimensions: 470¾ (*o.a.*), 455 (*p.p.*) × 58 × 28½ feet. Guns: 2—5 inch, 2—3 inch AA. Reciprocating engines. 4 cylindrical boilers, (except *Naruto*, 6 Miyabara). I.H.P. 3,750=12 kts. Fuel: 8000 tons oil as cargo and 1000 tons oil for own bunkers. Complement, 155—157.

Name.	*Builder.*	*Begun.*	*Launch.*	*Comp.*
Erimo ..	Kawasaki Co., Kobe.	3/5/20	28/10/20	16/12/20
Shiretoko ..		16/2/20	17/7/20	6/9/20
Ondo ..	Osaka I.W.	1922	1923	1923
Iro ..		1922	5/8/22	1923
Tsurumi ..		1921	29/9/21	1922
Sata ..	Yokohama Dock Co.	1920	28/10/20	1921
Shiriya ..		7/3/21	12/11/21	1922
Hayatomo ..	Kure D.Y.	1922	1923	1923
Naruto ..	Yokosuka D.Y.	3/22	1/23	10/24

Oilers and Tank Vessels—*continued.*

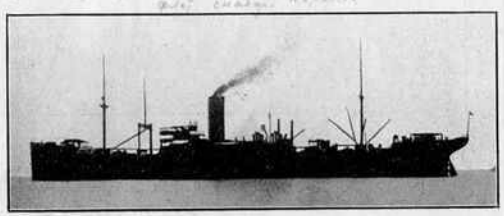
1920 *Photo, Navy Dept., Tokyo.*

SUNOSAKI (Yokosuka D.Y., June, 1918). 9800 tons. Dimensions: 400 × 50 × 25.2 feet. Guns: 2—4.7 inch, 2—12 pdr. H.P. 6000 = 14 kts. Carries 5000 tons oil. Built under 1916-17 Programme.

1920 *Photo, Navy Dept., Tokyo.*

TSURUGIZAKI (Kure D.Y., June, 1917). 1970 tons. 220½ × 31 × 14 feet. H.P. 900 = 9 kts. Guns: 2—12 pdr. Cargo: 1,100 tons oil. Built under 1916-17 Programme.

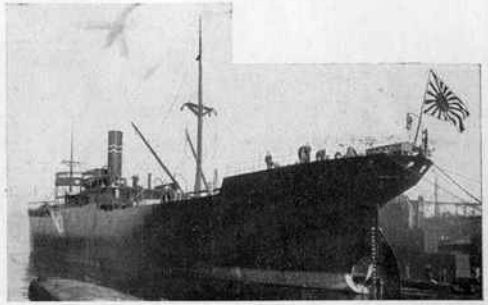
Fleet Supply Ship.



MAMIYA. *Photo added* 1926.

MAMIYA (Kawasaki Co., Kobe, 1923). Displacement: 17,500 tons. Dimensions: 475 × 61 × 28 feet. Guns: 2—4.7 inch, 2—3 inch AA. Triple expansion engines. 8 Kampon boilers. H.P. 7000 = 14 kts. Complement, 195.

Fleet Colliers.*



MUROTO. 1920 *Photo, Navy Dept., Tokyo.*

NOSHIMA (Feb., 1919). **MUROTO** (Oct., 1918). Both built by Mitsubishi Co., Kobe. 8750 tons. Dimensions: 345 × 50 × 23.9 feet. Guns: 2—4·7 inch, 2—3 inch AA. H.P. 2640=12.5 kts. Coal: 877 tons. Built under Special 1918-19 Programme.

*Officially rated as "Naval Storeships or Transports (*Unsokan*)."

SPECIAL SERVICE SHIPS.

Naval Storeships or Transports (*Unsokan*).

1920 *Photo, Navy Dept., Tokyo.*

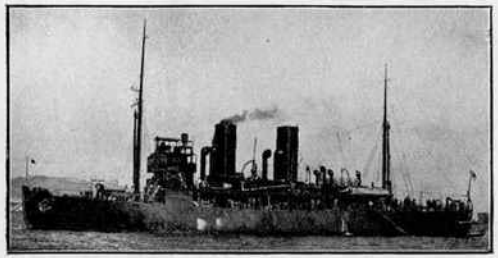
SEITŌ (ex-*Tsingtao Maru*, ex-German S.S. *Durendart*, built at Flensburg, 1906, and captured 1914). 3844 tons *gross*. Dimensions: 240×49.2×21¾ feet. Guns: 2—12 pdr. H.P. 1525 = 9 kts.

Salvage Vessel.

KURIHASHI (ex-*Herakles*, purchased from Swedish owners about 1909). 1040 tons. 182×30½×11¾ feet. I.H.P. 1200 = 12.5 kts. Fitted with powerful steam pumps and derricks.

This name means "Chestnut Bridge."

Ice Breaker.



OTOMARI. *Photo added 1925 by courtesy of the Ministry of Marine.*

OTOMARI (Kawasaki Co., October, 1921). 2700 tons. 200×50×18½ feet. Guns: 1—4·7 inch. Reciprocating engines. 5 cylindrical boilers. Speed: 13 kts.

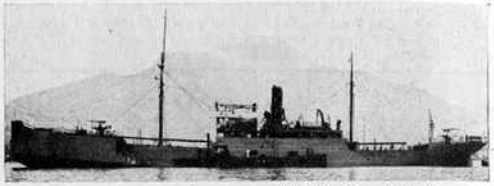
Submarine Salvage Vessel and Repair Ship.

1929 *Photo.*

ASAHI (March, 1899). Ex-battleship of 14,765 tons original displacement, rendered non-effective and converted for present use. Dimensions: 425½ (*o.a.*)×75½×27½ feet.

Machinery: 2 sets vertical triple expansion. 2 screws. 4 cylindrical boilers (replacing original Bellevilles). Present speed 12 kts. The name of this ship means "Rising Sun."

Surveying Vessels.



1920 *Photo, Navy Dept., Tokyo.*

KOSHŪ (ex-German S.S. *Michael Jebsen*, built by Howaldt, Kiel, 1904, and captured 1914). 1521 tons *gross*. Dimensions: 251.1 × 36.1 × 18.9 feet (*depth of hold*). Guns: 2—12 pdr. H.P. 800 = 9.5 kts. Ice-breaking stem.

Training Ships.

For Engineer Branch: **YURAGAWA.** 919 Tons. H.P: 625=11 kts.

For Cadets: **OHI,** Cruiser. *For Midshipmen:* Cruisers **YAKUMO, IWATE.**

For Seamen, Stokers and Boys (but not respectively): Disarmed battleships **FUJI** and **SHIKISHIMA.**

For Navigation and Seamanship: Cruiser **KASUGA.**

Troop Ship.

NOJIMA. 1933 *Photo.*

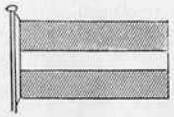
No details available.

(*Note: Is passing "Akagi" seen over well decks.*)

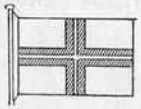
LATVIA.

(Revised 1933 by courtesy of the Minister of War.)

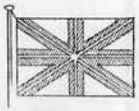
Flags.



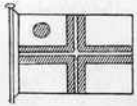
MERCANTILE.



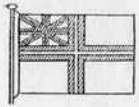
ENSIGN.



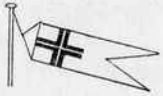
JACK.



ADMIRAL.



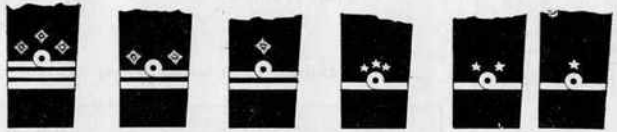
COMMANDER-IN-CHIEF OF FORCES.



CAPTAIN IN CHARGE OF A DIVISION.

Colour of Ships: Light grey.
Personnel: About 450 permanent + 200 yearly conscripts.
Minister of War: General T. Balodis.
Commanding Officer, Naval Forces: Commander T. Spade.
Mercantile Marine:
108 Vessels of 196,733 gross Tonnage.

Naval Uniforms.



Admiralis Admiral | Juras Kapteinis Captain | Komand Kapteinis Commander | Kapteinis Lt. Commander | Virsleitnants Lieutenant | Leibrants Sub-Lieutenant

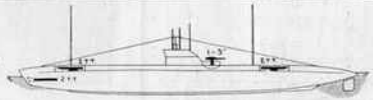
Note.—Admiral's top stripe should be thinner than shown above.

Mercantile Marine.

(From "Lloyd's Register," 1931 figures.)

Total *gross* tonnage: 206,686.

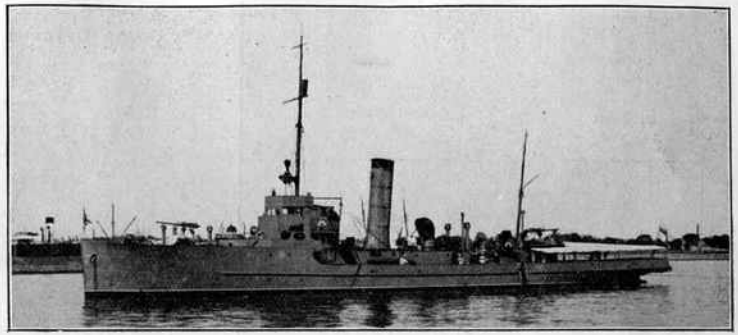
2 Submarines.



RONIS. 1927 *Photo, A. & Ch. de la Loire (Builders).*

2 *Loire-Simonot* type: ***Ronis*** (At. & Ch. de la Loire, Nantes, July 1st, 1926), ***Spidola*** (Ch. & At. Augustin Normand, Havre, Oct. 6th, 1926). Displacement: $\frac{310}{414}$ tons. Dimensions: 180½ × 15 × 10 feet. Armament, 1—3 inch AA., 3 M.G., 6—17.7 inch tubes (2 fixed bow, other 4 in revolving twin mounts. Machinery: 2 sets Sulzer Diesels. H.P. $\frac{1200}{1000}$. Speed: $\frac{14}{9.5}$ kts. Oil Fuel: 19 tons. Radius: $\frac{1000}{850}$ miles at $\frac{14}{9}$ kts. Diving limit, 28 fathoms. Complement, 34.

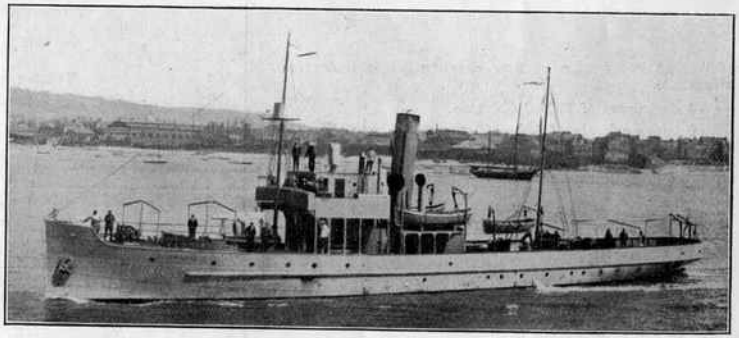
1 Gunboat.



1926 *Official Photo.*

VIRSAITIS (ex-German Minesweeper *M* 68, Neptun Werft, Rostock, 1917). Reconstructed at Riga, 1921-22, after being sunk during War. Displacement: 525 tons. Dimensions: 182 (*w.l.*) × 23½ × 7 feet. Guns: 2—8.35 cm. AA., 1—76 mm., 4 M.G. 1 S.L. H.P. 1600 = 17 kts. Coal: 120 tons. Complement, 69.

2 Minesweepers.



IMANTA. 1927 *Photo, Messrs. Normand (Builders).*

VIESTURS (Chantiers Dubigeon, Nantes, May 27th, 1926), **IMANTA** (Normand, Havre, Aug. 11th, 1926). Displacement: 255 tons. Dimensions: 160 × 21 × 5 feet. Guns: 1—3 inch AA., 4 M.G. Provision for 30 mines. Machinery: 2 sets triple expansion. H.P. 750 = 14 kts. Fuel: 30 tons. Complement, 39.

Note.—These two vessels were designed for the Latvian Navy by Ch. & At. Augustin Normand.

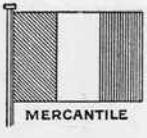
Surveying Vessel.

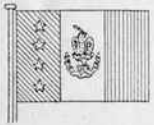
HIDROGRAFS (ex-*Weichsel*, J. W. Klavitter, Danzig, 1918). 285 tons *gross*. Dimensions: 126¼ × 23¼ × 13½ feet. Triple expansion engines. Speed: 10 kts.

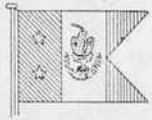
MEXICO

Officially Revised 1933.

ENSIGN


MERCANTILE


SECRETARY OF WAR AND NAVY DEPTS.


OFFICER COMMANDING A DIVISION.

Minister of War and Marine: General Abêlardo L. Rodriguez.

Docks.

At Salina Cruz (Pacific Coast), Government dry dock, 664 × 79⅓ × 35½ feet (leased to Tehuantepec National Railway Co.)

The following Programme of new construction is under consideration.

4 destroyers of 800—1,000 tons.

6 torpedo boats of 500—600 tons.

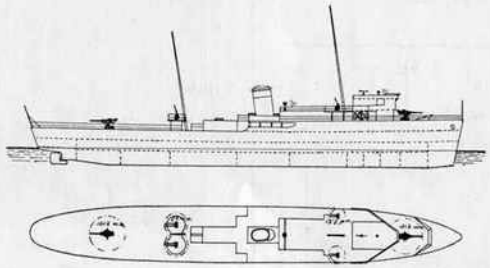
8 vedette boats of 100—130 tons.

All are to be built in Spanish Yards.

Coast Defence Vessel (classed as *Crucero*).

ANAHUAC (ex-*Deodoro*, ex-*Ypiranga*, purchased from Brazil, 1924). Built at La Seyne, 1898. Displacement: 3162 tons. Complement, 200. Length (*p.p.*) 267½ feet. Beam, 48 feet. *Max.* draught, 13¼ feet. Guns: **2**—9.4 inch, 45 cal.; **4**—4.7 inch, 50 cal. Armour (Harvey-nickel): 13¾″ Belt (amidships), 4″ Belt (ends), 1½″ Deck (reinforcing belt), 8″ Turrets, 3″ Casemates, 5″ Conning tower. Machinery: 2 sets triple expansion. 2 screws. Boilers: Babcock (converted to burn oil). Designed H.P. 3400 = 15 kts. Oil fuel: 440 tons. *Gunnery control*: A few voice pipes only.

Transport Gunboats.



A (Unión Naval de Levante, Valencia).

B (Echevarrieta y Larrinaga, Cadiz.)

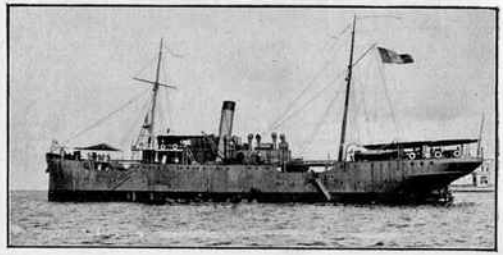
1,600 tons. Dimensions: 282 × 39·9 × 10 feet.
Turbines: H.P. 6,500 = 20 kts. 2 screws. Yarrow boilers.
Guns: **2**—4″, **2** quadruple 23m/m AA. poms.
2 twin 13 m/m AA. poms.
Capacity: 500 men, 80 horses.

Transport Gunboats—(*continued*).

C. D. E. (all at S/E de C/N, Ferrol).

1,200 tons. Dimensions: 262·4 × 32·8 × 9 feet.
Turbines: H.P. 600 = 20 kts. 2 screws.
Guns: **2**—4″, **2** quadruple 23 m/m AA. poms,
2 twin 13 m/m AA. poms.
Capacity: 250 men, 20 horses.

Armed Transport (*Transporte*).

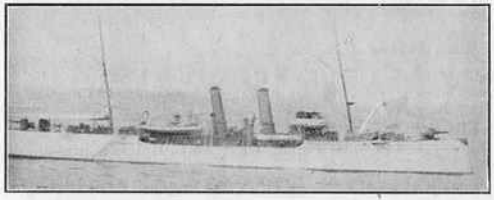


1925 *Photo, by courtesy of Captain Julio Morales Coello, C.N.*

PROGRESO (Odero, 1907). 1590 tons. Dimensions: 230 × 36½ × 11 feet. Guns: **4**—6 pdr. H.P. 1400 = 13 kts. Coal: 209 tons.

2 Gunboats (*Cañoneros*).

10 *vessels*: Nos. 1—8 at Astilleros Euskalduna, Bilbao.
Nos. 9—10 at Vera Cruz, Mexico.
150 tons. M.A.N. diesels. 2×1,500 H.P.=26 kts.
Guns: **2** twin 13 m/m. poms. (forward).
1 quadruple 25 m/m. pom. (aft).



NICOLAS BRAVO (Odero, 1903). 1227 tons. Dimensions: 242×34×9¾ feet. Guns: **2**—4 inch, **4**—6 pdr. H.P. 3000=12.25 kts 2 screws. Oil fuel: 226 tons. Complement, 130.

Gunboats—*continued*.

To be disposed of shortly.

AGUA PRIETA (ex-*U.S.S. Machias*, Bath I.W., 1891). Purchased 1921. 1293 tons. Dimensions: 204 × 32 × 12¼ feet. Guns: **6**—4 inch, **2**—6 pdr. H.P. 1800 = 15.5 kts. Coal: 285 tons. Complement, 157.

4 Patrol Vessels (*Guardacostas*).

TAMPICO, MAZATLAN, ACAPULCO (ex-*Salinas*), **VERA CRUZ.** All are ex-trawlers purchased in Canada 1920. Built 1918. 486 tons. Dimensions: 133 × 24 × 13¼ feet. Guns: **1**—6 pdr., **2** M.G. I.H.P. 557=8 kts. Coal: 208 tons.

7 Vessels under control of Free Ports Department.

BOLIVAR (ex-*Floraba*), **WASHINGTON** (ex-*Gonzaba*). Both built 1920 by Dominion S.B. Co., Toronto. 1655 and 1670 tons *gross*.

MOCTEZUMA (ex-*Lake Fisher*) (Globe S.B. Co., Superior, Wis., 1919). 2713 tons *gross*.

COAHUILA, JALISCO (Cramps, Philadelphia, 1916). 2585 tons *gross*.

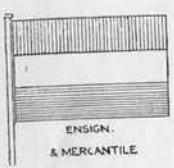
MEXICO (Hamilton, Port Glasgow, 1913). 2548 tons *gross*.

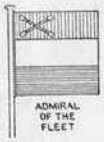
TABASCO (McMillan, Dundee, 1901). 1022 tons *gross*.

Note.—Above ships are available for transport service when required.

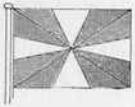
NETHERLANDS

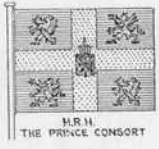
Officially Revised 1933.

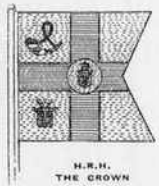




Officers commanding Flotillas fly a yellow pendant with black letter D in centre, from signal yard.







Notes to Flags.

Royal Standard } Colours of these are *Nassau* blue (*dark* blue) and *dark*
H.R.H. The Crown Princess } orange.

H.R.H. The Prince Consort—Colours of this are *Mecklenburg* blue (*light* blue) and *dark* orange.

Governor of the East Indies:—A broad pendant (Red, White, Blue) above Ensign.

Governors of Colonies.—As ensign, but with following distinguishing marks on red stripe near staff; Governors of Suriname and of Curaçao: Three white balls.

Netherlands Uniforms.

	1	2	3	4	5	6	7	8	9
	Admiraal	Luitenant-Admiraal	Vice-Admiraal	Schout by-nach-t	Kapitein ter Zee	Kapitein Luitenant ter Zee	Luitenant ter Zee 1e Kl.	Luitenant ter Zee 2e Kl.	Luitenant ter Zee 3e Kl
Corresponding to British	*Admiral of the Fleet*	*Admiral*	*Vice-Admiral*	*Rear-Admiral*	*Captain*	*Commander*	*Lieut.-Commander*	*Lieutenant*	*Sub. Lieut.*

In relative ranks—
Doctors have insignia 5 to 9 without the curl.
Paymasters " 5 to 10 " in silver.
Engineers " 5 to 10 with the curl, and are to be distinguished by the badge of a torch crossed by two arrows on the collar, instead of the usual anchor.

Flying Officers are of ranks 7, 8 and 9, and are to be distinguished by the badge of an aeroplane propeller on collar instead of the usual anchor.

R.N. Reserve Officers are of ranks 6, 7, 8, and 9.

Naval Guns (Krupp and Bofors Models). (Officially revised, 1932.)

Notation.	Calibre.		Official Mark.	Long.	Weight of Gun.	Weight of Shell.	Initial Velocity.	Max. penetration with A.P. capped against K.C.		
								8000	5000	3000
	in.	cm.		cals.	tons.	lbs.	ft. secs.	in.	in.	in.
HEAVY	11	28	"	42½	31	595	2920	8	13	15½
	9·4	24	" No. 2 "	40	24½	375	2788	3½	7½	10½
	9·4	24	" No. 1 "	40	24½	375	2690	4	8½	10½
MEDIUM	5·9	15	" No. 8 "	50	7½	101½	2953	—	—	—
	5·9	15	"Nos. 6 & 7"	50	5½	101½	2953	—	—	—
	5·9	15	" No. 5 "	40	5	90½	2788	—	—	—
	5·9	15	" No. 3 "	40	4½	90½	2444	—	—	—
	5·9	15	" No. 2 "	40	4½	100	2231	—	—	—
	4·7	12	" Nos. 4 & 5 "	50	4	53	2950	—	—	—
	4·7	12	" No. 3 "	40	2	52½	2231	—	—	—
	4·7	12	" No. 2 "	40	2	52½	2231	—	—	—
	4·7	12	" No. 1 "	40	2	52½	2231	—	—	—
LIGHT	4·1	10·5	Semi. Aut.	50	—	39½	2897	—	—	—
	3·5	8·8	"Nos. 1—3"	45	—	22	2625	—	—	—
	3·0	7·5	"Nos. 6—9"	52	1½	13	2936	—	—	—
	3·0	7·5	" No. 5 "	18	—	13	1148	—	—	—
	3·0	7·5	" No. 4 "	30	—	13	2034	—	—	—
	3·0	7·5	" No. 3 "	40	—	13	2231	—	—	—
	3·0	7·5	" No. 2 "	40	—	13				
	3·0	7·5	" No. 1 "	40	—	13				
	3·0	7·5	Semi Aut. 5	52	—	—	—			
	3·0	7·5	Semi Aut. 4	52	—	13	2936	—	—	—
	3·0	7·5	" 3	52	—	13	2936	—	—	—
	3·0	7·5	" 2	52	—	13	2936	—	—	—
	3·0	7·5	" 1	52	—	13	2936	—	—	—
	2·0	5·0	" No. 2 "	40	—	3·9	2231	—	—	—
	2·0	5·0	" No. 1 "	40	—	3·9	2231	—	—	—
	2·0	5·0	Semi Aut.	52	—	3·9	2936	—	—	—
	1·5	4·0	Aut.	40	—	·2	1975	—	—	—
	1·5	3·7	"	30	—	1·0	1358	—	—	—
	—	—	—	—	—	—	—	—	—	—

Notes

All displacements are "Standard." Regarding the two sets of figures given for complements on later pages, (H) denotes complement when serving in home or European waters; (A) denotes complement when serving in Dutch East Indies or abroad.

Personnel: About 7,700 all ranks, navy and marine infantry, including Officers.

Oversea Possessions: Dutch East Indies (Sumatra, Java, Borneo, etc.); Dutch Guiana (Suriname) Curaçao, Bonaire, Aruba, Saba, etc.

Minister of Defence: Dr. L. N. Deckers. *Chief of the Naval Staff*: Rear-Admiral J. de Graaff.

Colour of Ships: Greyish Blue.

Tonnage = Standard displacement.

Form of Address:—Hr., Ms. "*Name of Ship*"

Mercantile Marine.

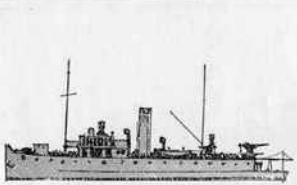
From "Lloyd's Register" 1932 figures.

1392 Vessels of 2,758,812 gross Tonnage.

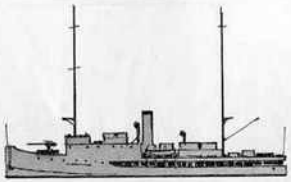
Defence Estimates, 1932.

Naval Construction	6,450,700	florins.
Ordinary	83,685,612	"
Non-military Expenses	5,951,997	"
	96,088,309	"

} military and naval expenses.



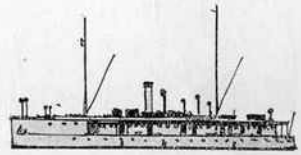
VAN MEERLANT.
DOUWE AUKES.



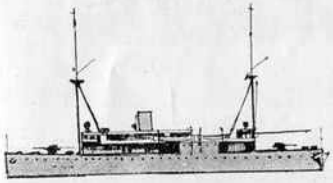
PRO PATRIA.

MINE SWEEPERS.
A.B.C.D.

PELIKAAN.
(Submarine Depot Ship).

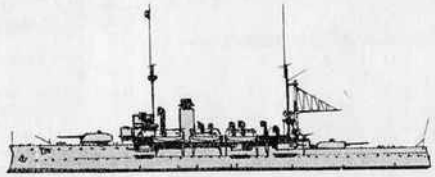


C. DREBBEL.
(Submarine Depot Ship).

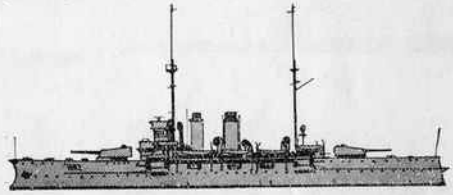


KRAKATAU. (**E. I.**)

FRISO, BRINIO, GRUNO.

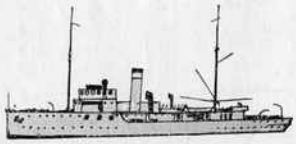


JACOB VAN HEEMSKERCK.

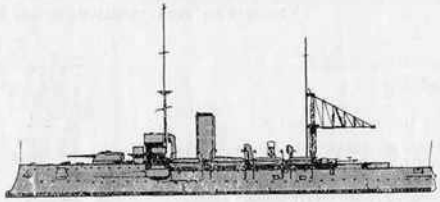


DE ZEVEN PROVINCIEN.

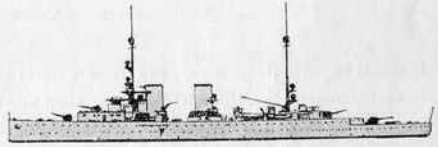
JOHAN MAURITS VAN NASSAU.
SOEMBA and FLORES.



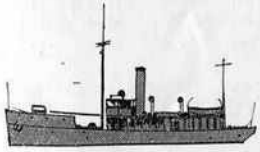
NAUTILUS.



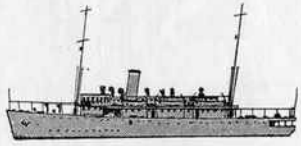
HERTOG HENDRIK.



SUMATRA. JAVA.

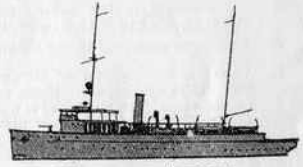


HYDROGRAAF.



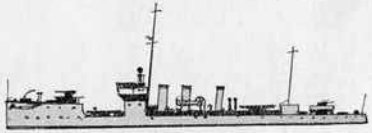
RIGEL.

PRINS VAN ORANJE. GOUDEN LEEUW.



WILLEBRORD SNELLIUS.

Z 5



Z 6—8 *type.*

Z 1—3

De Ruijter *class* (8).

O 6—7.

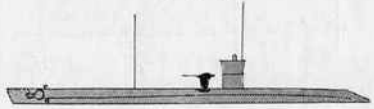
O 12—15.

K 11—13.

O 9—11.

M 1.

O 8.



K 2—4. K 8—10.

K 5—7.

Vessels in Netherlands East India.

It should be noted that there are two separate Naval Forces on this Station, viz.:—

1. East India Squadron (Imperial Force) operating with East India Marine (which is the property of the Colony,) include the following ships: *Zeven Provincien, Java, Sumatra, De Ruyter, Piet Hein, Evertsen, Van Galen, Witte de With, Kortenaer, Zeeslang, Panter,* Torpedo-motorboats, Submarines *K* 13 to *K* 2, *Flores, Soemba, Krakatau, Propatria, Herkules, Serdang, Prins van Oranje, Gouden Leeuw,* Minesweepers *A, B, C, D, Pelikaan, Snellius, Tydeman.*
   Serving in West-India (*Curaçao*), Destroyer *Van Nes.*
   Building or temporarily serving in Holland but destined for East Indies: *Celebes, Banckert, K* 14 to *K* 18. Same, but destined for West-Indies: *Johan Maurits, Z* 5.

All these ships described in the following pages.

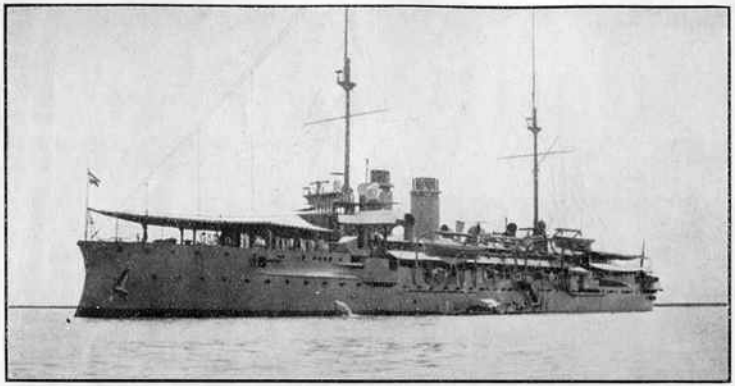
2. "Gouvernements—Marine," the property of the East Indies Government. Are used for Customs and Police Duties, &c. Some vessels armed with 4 and 1 pdr. guns. It is purely a *civil* organisation. The personnel is only enlisted in the Naval Reserve and the ships are destined for auxiliary duties with the fleet in time of war.

SHIPS OF THE "GOUVERNEMENTSMARINE" to be transformed into warships in time of War.

Name	*Built at*	*Year*	*L. pp.*	*Breadth*	*Draught*	*Displ.*	*I.H.P.*	*Tr. speed*	*Compl.*
Van Doorn	Rotterdam	1900	177	27·6	11·2	838	394	8·84	82
Zwaluw	Vlissingen	1911	164	31·2	10·5	802	1,140	12·40	44
Albatros	,,	1912							
Orion	Soerabaja	1912	183·5	29·6	13·4	714	1,380	14·20	71
Aldebaran	,,	1913							
Bellatrix	Amsterdam	1914	175	29·5	9·84	775	800	12·40	44
Canopus	,,	1914							
Deneb	,,	1915							
Gemma	Rotterdam	1918	200	29·5	9·84	795	800	12·30	81
Eridanus	Soerabaja	1918							
Fomalhout	,,	1923	186	30·5	9·84	800	855·5	13·40	49
Sirius	Gorinchem	1922	182·5	31·2	10·2	936	900	12·78	74
Wega	,,	1922							
Zuiderkruis	Amsterdam	1923	257	35·7	13·6	2,524	1,600	12·50	83
Valk	Rotterdam	1929	230	28·5	9·23	1,011	3,350	18·00	61
Arend	,,	1929							
Rijpel	Amsterdam	1929	228	36·1	9·84	1,580	1,400	12·50	66
Merel	Soerabaja	1928	152	27·6	8·85	600	525	12·10	40
Reiger	,,	1930							
Fasant	,,	1930							

SHIPS OF BUOY- AND LIGHTHOUSE SERVICE IN INDIA to be transformed into warships in time of War.

Name	*Kind*	*Built at*	*Year*	*Length pp.*	*Breadth*	*Draught*	*Displ. m.3*	*I.H.P.*	*Speed*	*Compl.*
Pharus	Steamship	Rotterdam	1904	162·5	25·6	13·1	663	458	10·0	41
Hoofdinspecteur Zeeman	Steamship	Amsterdam	1909	164	30·2	10·5	780	860	11·2	43
Castor	Motorship	Soerabaja	1915	163	32·8	9·84	670	500	8·5	43
Pollux	Steamship	Amsterdam	1922	182·5	31·2	10·2	946	550	12·0	48



1924 *Photo, R. F. Scheltema, Esq.*

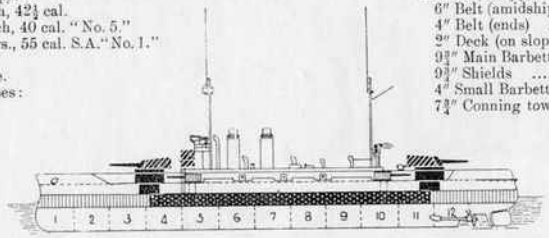
DE ZEVEN PROVINCIEN (March, 1909).

Displacement, 5644 tons. Complement, 120+230 natives=350.

Length (*o.a.*), 333 feet. Beam, 56·1 feet. *Maximum* draught, 20·2 feet.

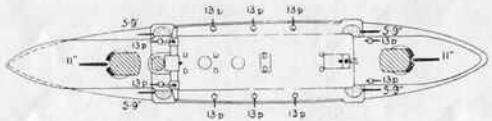
Guns (Krupp):
2—11 inch, 42½ cal.
4—5·9 inch, 40 cal. "No. 5."
10—13 pdrs., 55 cal. S.A. "No. 1."
4—1 pdr.
2 machine.
Torpedo tubes:
None.

Armour (Krupp):
6″ Belt (amidships) .....
4″ Belt (ends) .....
2″ Deck (on slopes) .....
9¾″ Main Barbettes (N.C.)
9¾″ Shields .....
4″ Small Barbettes
7¾″ Conning tower (N.C.)



Ahead:
1—11 in.
2—5·9 in.

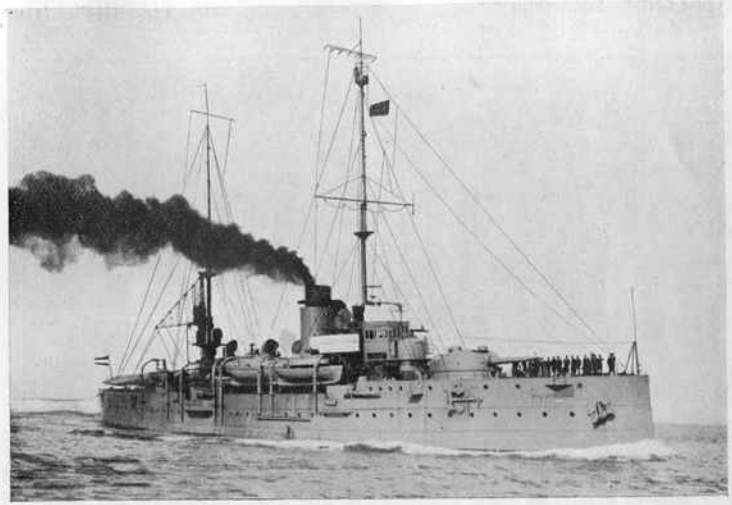
Astern:
1—11 in.
2—5·9 in.



Broadside: **2**—11 in., **2**—5·9 in.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 8 Yarrow. Designed H.P. 8000=16 kts. (Trials: 8516=16·3 kts.) Coal: *normal*, 700 tons; *maximum*, 1030 tons. Radius of action, 2100 miles at 15·3 kts; 5100 miles at 8 kts. Amm. hoists improved 1920.

Notes.—Main belt is 7 feet wide. Laid down Feb., 1908 at Amsterdam D.Y.
No longer included in active list and employed as an artillery training ship.



1930 *Photo, courtesy of Ministry of Defence.*

JACOB VAN HEEMSKERCK (September, 1906).

Displacement, 4445 tons. Complement, 302.

Length (*o.a.*), 321½ feet. Beam, 49·9 feet; Beam outside sponsons, 55·4 feet. *Max.* draught, 18¾ feet.

Guns (Krupp):
2—9·4 in., 45 cal. "No. 2."
6—5·9 in., 40 cal. "No. 5."
6—13 pdrs. "No. 3."
4—1 pdr.
2 machine.
(Torpedo tubes removed.)

Armour (Krupp)
6″ Belt (amidships) ...
4″ Belt (ends) .....
2″ Deck (reinforcing belt)
7¾″ Main barbettes ...
4″ Hoods to these ...
6″ Small barbettes ...
7¾″ Conning tower (K.C.)

Ahead:
1—9·4 in.
2—5·9 in.

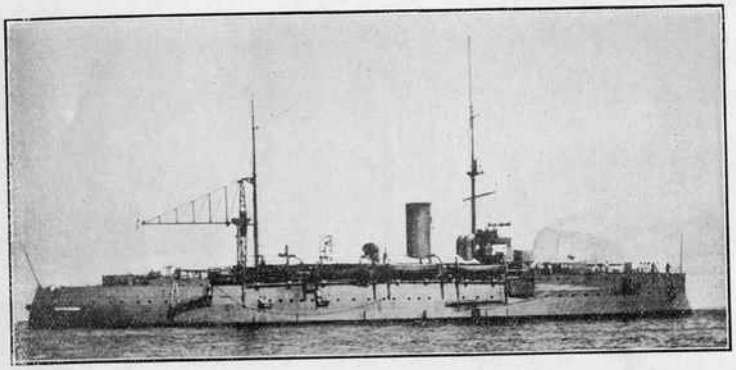
Astern:
1—9·4 in.
2—5·9 in.

Broadside: **2**—9·4 in., **3**—5·9 in.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 6 Yarrow. Designed H.P. 6400=16·5 kts. Coal: *normal* — tons; *maximum* 610 tons.

Notes.—Main belt is 6 feet wide and about 220 feet long. Begun at Amsterdam D.Y., 1905, and completed, May, 1908. *Trials*: I.H.P. 6396=16·54 kts. Radius of action: 3300 miles at 10 kts.

Aircraft Note.—Two seaplanes added to equipment, May, 1929 and carried occasionally.



1928 *Photo, J. Vlieger, Amsterdam.*

HERTOG HENDRIK (1902).

Displacement, 4560 tons. Complement, 325.

Length (*o.a.*), 316·9 feet. Beam, 49·8 feet. *Maximum* draught, 19 feet.

Guns (Krupp):
1—9·4 inch, 40 cal. "No. 1."
4—5·9 inch, 40 cal. "No. 3."
4—13 pdr. "No. 3."
4—1 pdr.

Armour (Krupp):
6″ Belt (amidships) .....
4″ Belt (ends).....
2″ Deck (reinforcing belt)
9¾″ Barbettes.....
4″ Hoods to these .....
9¾″ Conning tower (fore)

Gunnery Notes—Armament reduced, 1926, by removal of 1—9.4 inch and several smaller guns, on appropriation as Cadets' Training Ship.

Armour Notes—The belt is 5½ feet wide and four feet of it is below the waterline. Gratings to engine room hatches are 4·7 inches thick.

General Notes.—2 planes carried occasionally.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 6 Yarrow. Designed H.P. 6300 = 16 kts. Coal: *normal* 680 tons; *maximum* 830 tons. Same radius of action as *M. H. Tromp.* Begun 1900 at Amsterdam D.Y.

(**East Indies Station.**)

CELEBES* (Wilton-Fijenoord Co., Rotterdam).
Displacement: 6,000 tons (Trial 6,580).
Length, 560·3 Beam, 51·5 Draught, 16·1 feet.

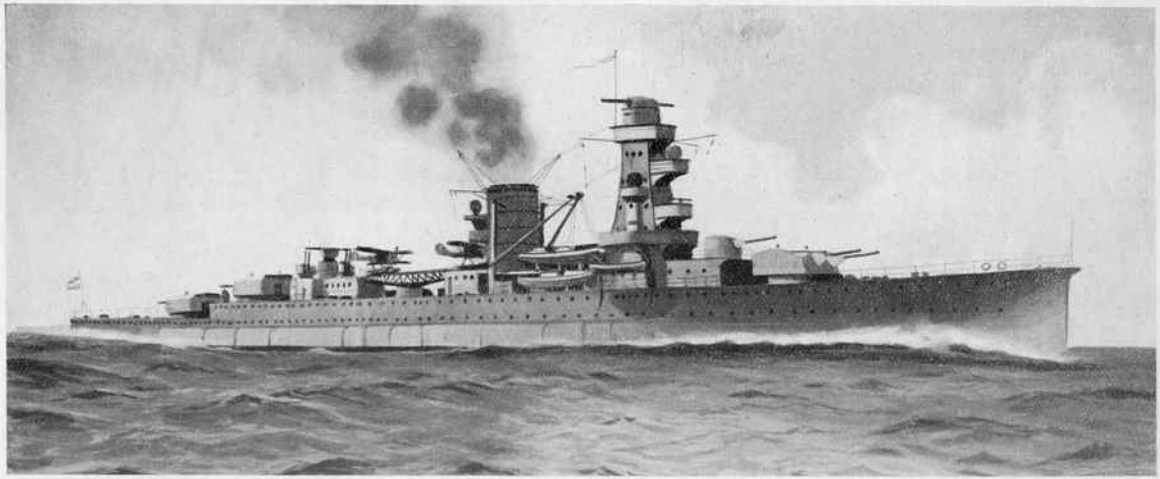
Guns: (Bofors)
7—6 inch 50 cal.
4—4 inch 40 cal. AA.

Armour:
3″ Belt.

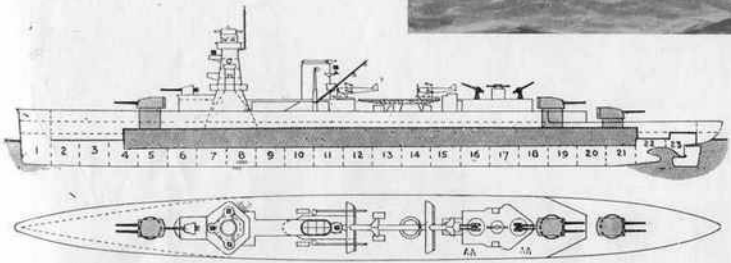
Tubes:

**Celebes* was the name selected for this ship when her construction was proposed some years ago. The name of the 1932 cruiser has not yet been announced.

Machinery: 2 sets Parsons geared Turbines. H.P. 80,000 = 32 kts. Yarrow boilers.
Oil: tons.



1932 *Illustration.*



General Notes.—This ship has been projected for a number of years as a third unit of the *Java* class. The present design has been dictated by economic conditions, naval opinion favouring eight guns as a minimum, and a displacement of 5,250 tons was budgetted for. This allowed for three twin turrets only (two triple turrets were considered) giving a bow fire of two and astern of four guns. In order to strengthen the fire ahead, the design was modified and displacement raised to 6,000 tons, the turret being moved 20 feet forward and a platform for a single 6″ gun built in as a prolongation of the superstructure. Published plans do not show this modification, which is not as yet officially confirmed.

Armour Notes.—Belt begins 85 feet from the bows and ends 65 feet from the stern, and is 13 feet wide.

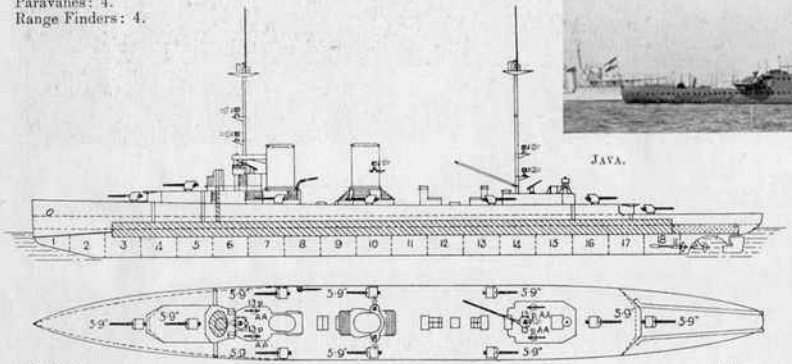
(East Indies Station.)

JAVA (Aug. 6th, 1921) & **SUMATRA** (Dec. 29th, 1920).

Displacement, 6670 tons.
Complement, 287 + 238 natives = 525.
Length (*o.a.*), 509·5 feet. Beam, 52½ feet. *Max.* draught, 18 feet.

Guns (Bofors):
10—5·9 inch (50 cal.) "No. 6."
4—13 pdr. S.A., 55 cal. (anti-aircraft) "No. 4."
10 machine.
Torpedo tubes:
None.
Mines: 12.
Searchlights: 6—47".
Paravanes: 4.
Range Finders: 4.

Armour (Coventry):
3" Belt .....
Deck { 1" flat / 2" slopes
4" Gun shield faces (much thinner at sides and roof)
2" Funnel bases ...
5" Conning tower



Ahead: **4**—5·9 in.
Broadside: **7**—5·9 in.
Astern: **4**—5·9 in.

Machinery: 3 sets Krupp-Germania turbines. 3 screws. Boilers: 8 Schulz-Thornycroft. Designed H.P., 72,000 = 31 kts. Fuel, oil only: *normal*, 1000 tons; *maximum*, 1200 tons. Radius of action: 4800 miles at 12 kts., 3600 miles at 15 kts.

Armour Notes.—C.T. divided into gunnery control and navigation compartments. 3" belt is 392½ feet long. Towards stern and over steering gear, belt is narrower for a length of 42½ feet, and is only 2" thick.

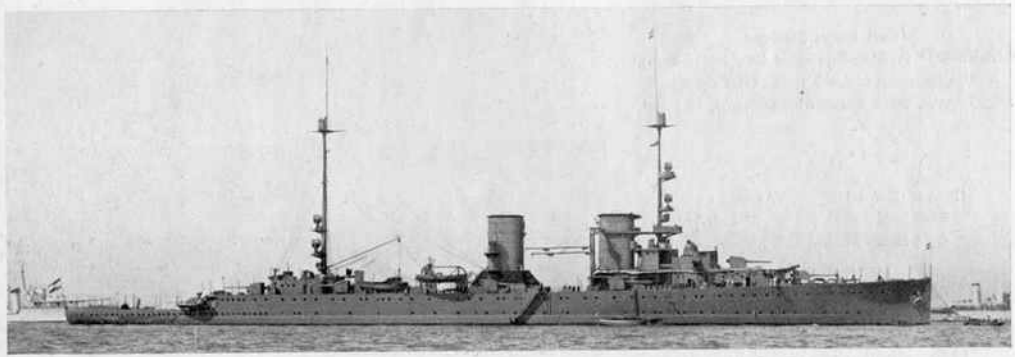
Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
Sumatra	Nederlandsche Scheepsbouw Maatschappij, Amsterdam	Krupp, Germania	July,'16	Nov, 1925	82,000 = 31·8	Schulz	30.3
Java	K. M. de Schelde, Flushing	Krupp, Germania	May,'16*	1924	73,000 = 31.5 (St. Abbs, 7/7/25)	Schulz	

* Contracted for, June, 1917.

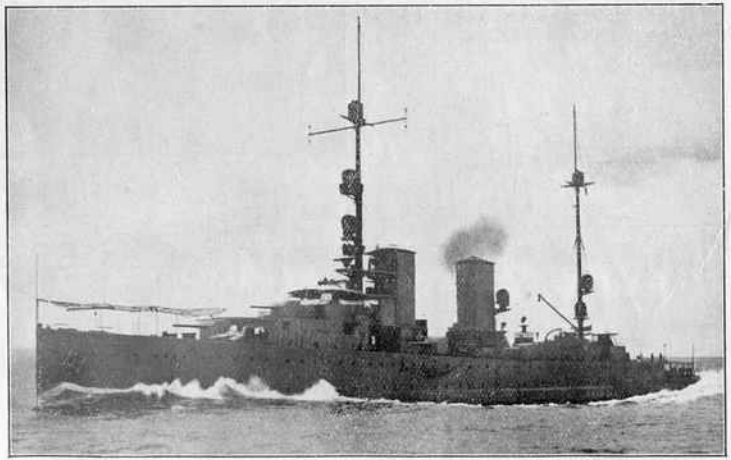
Aircraft Notes.—Each ship carries 2 Fokker C-VII seaplanes, with Siddeley "Lynx" engines, crew 3 men. To handle these, 2 small cranes are now mounted abeam, to port and starboard, just abaft first funnel.

General Notes.—The German design of these ships is evident in their appearance. A third ship of this type (*Celebes*) was authorised, but cancelled. *Java*, though completed in 1924, did not enter into service until May, 1925.

Gunnery Notes.—5.9 inch guns elevate to 25-30°. Electric hoists.

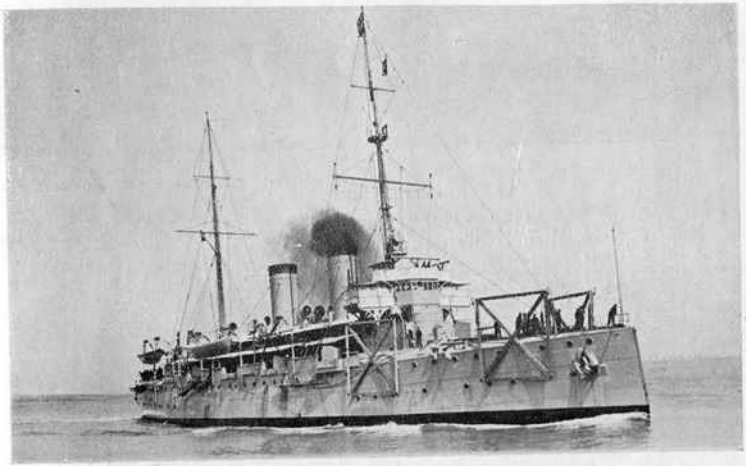


JAVA. 1933 *Photo.*

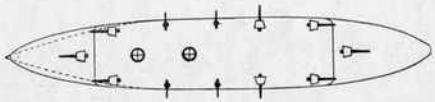


JAVA. 1924 *Photo, by courtesy of the Ministry of Marine.*

Cruiser.



GELDERLAND. 1932 *Photo.*



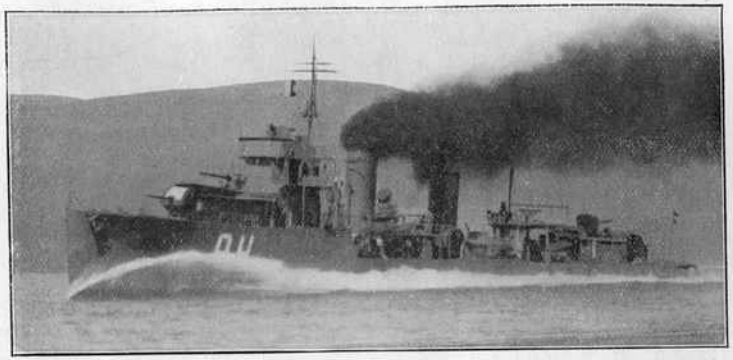
Gelderland (1898). 3,512 tons.
Guns: 8—4·7", 3—3", 1—3" S.A., 2—37 mm., 7 M.G.

Is officially rated as a Training Ship but is considered effective for War duties.

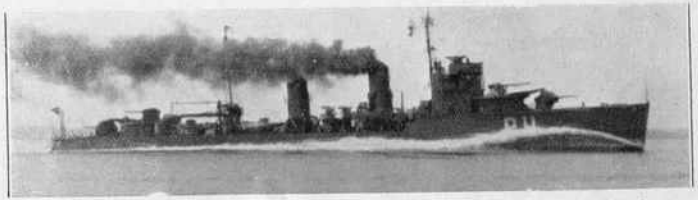
FLOTILLA LEADER.

A flotilla leader of Yarrow design is to be laid down in 1934 to replace one of the old coast defence ships.
Displ. 2,500 Tons. Guns: 8—4.7".

8 Destroyers (*Torpedobootjagers*).



PIET HEIN. 1928 *Photo.*



PIET HEIN. 1929 *Photo, by courtesy of Messrs. Burgerhouts (builders).*

8 *Yarrow* type: ***De Ruijter*** (K. M. de Schelde, Flushing, Oct. 23, 1926), ***Evertsen*** (29 Dec., 1926), ***Kortenaer*** (June 30, 1927), ***Piet Hein*** (April 2, 1927), all by Burgerhouts, Rotterdam; ***Van Galen*** (June 28th, 1928), ***Witte de With*** (Sept. 11th, 1928), both by M. Fijenoord. ***Banckert*** (1929), ***Van Nes*** (1930), both by Burgerhouts. Displacement: 1316 tons. Dimensions: 307 (*p.p.*), 322 (o.a.) × 31½ × 9¼ feet *max.* draught. Armament: 4—4.7 inch (50 cal.), 2—3 inch AA., 4 MG. 6—20.8 inch tubes in first four. Other four carry AA. armament of 1 3 inch and 4 2 pdr. pom-poms. Parsons geared turbines and Yarrow super heated boilers (250 lbs. pressure in first four, 400 lbs. in others). Designed H.P. 31,000=34 kts. in loaded condition, 36 kts. light. Oil: 330 tons. Complement, 129. First 4 have double laying gear.

Identification letters—DR—De Ruijter, EV—Evertsen, KN—Kortenaer, PH—Piet Hein; VG—Van Galen, WW—Witte de With, BK—Banckert, VN—Van Nes.

10 Torpedo Boats (*Torpedobooten*).

Z7, Z8 similar to above.

1932 *Photo.*

3 boats, ***Z 8, Z 7, Z6*** (K. M. de Schelde, Fijenoord, 1915). 263 tons. Dimensions: 193 × 19⅝ × 5½ feet. Guns: **2**—13 pdr., "No. 4," **2** Machine. Torpedo tubes: **4**—17·7" (one twin deck mounting — 2 single ditto). Designed H.P. 5,000 to 5,500 = 27 kts. (made about 27·4 on trials). Machinery: Reciprocating. Boilers fitted to burn coal or oil. Carry 80 tons coal + 7 tons oil. Radius of action: 425 miles at 20 kts. Complement, 48. Completed 1916.

Z 1. 1933 *Photo.*

3 boats, ***Z 1—3*** (Ned. Scheepsb. Mij., Amsterdam, 1916-17.). 277 tons. Dimensions: 201 × 20½ × 6 feet. Guns: **2**—13 pdr., "No. 4," **2** machine. Torpedo tubes: **4**—17·7 inch (one twin deck mounting + **2** single ditto). Designed S.H.P. 5500 = 27 kts. Curtis type turbines. Boilers fitted to burn coal or oil. Carry 72 tons coal + 9·4 tons oil. Radius of action: 425 miles at 20 kts. Compl. 48.

Z 4 scrapped 1933.

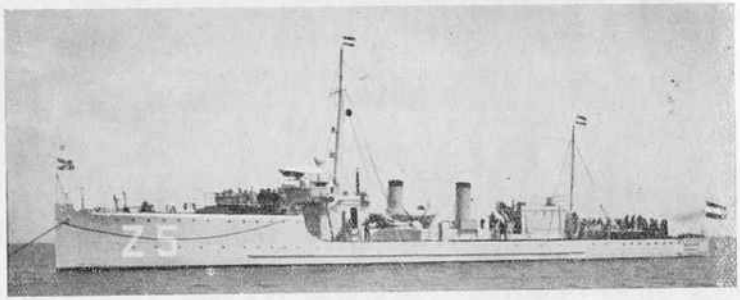
G13. 1919 *Photo, Fotopersbureau "Helland," Amsterdam.*

(*Now only used for Subsidiary Duties in Harbour.*)

3 boats ('12-'14): ***G 16, G 15*** (Fijenoord Co., Rotterdam. 1914), ***G 13*** (K. M. de Schelde, Flushing, 1913). 180 tons. Dimensions: 162·4 × 17 × 4·6 feet. Armament: **2**—13 pdr. "No. 4," **3**—17·7 inch deck tubes. Designed H.P. 2600 = 25 kts. (26 kts. on trials). Coal: 44 tons. Compl. 27.

G 12. Disarmed, used as Torpedo Transport.
G 2. Disarmed, used as Stokers' Training Ship.

Michiel Gardeyn, *Willem Warmont*, } disarmed. Used on subsidiary duties.



Z5. 1932 *Photo.*

Z 5 (De Schelde Vlissingen, 1913). 263 tons. Dimensions: 193 × 19·8 × 5·6 feet. Guns: **2**—13 pdrs., **2** M.G. Speed now about 22 kts.

Notes.—Originally as *Z* 8. Refitted for patrol work 1932, with lengthened forecastle; foremost boiler removed; additional bunker space. Is being employed as a Torpedo Tender, 1933, instead of proceeding to W.-I.

DISPATCH VESSELS.

1 boat. ***Zeesgang***, (1906-7), ex-Torpedo boat.

1 boat. ***Panter*** (ex-Destroyer).

(Both disarmed)

(E. Indies Station), Coastal Motor Boats.

T.M. 1, S.M. 2, S.M. 3, S.M. 4, all by Messrs. John I. Thornycroft & Co., Ltd., 1927–1928. 55 × 11 feet. **2** Thornycroft motors, each 375 B.H.P. = 37 kts. contract speed, (trials 39 kts.). Auxiliary engine to give a cruising radius of 800 miles. Armament: **2** Lewis guns, **2**—18 inch torpedoes, **4** D.C., and an outfit of Thornycroft C.M.B. type Smoke Floats.

"O" numbers are Home Service "K" numbers, East Indies.
Displacement: "Standard."

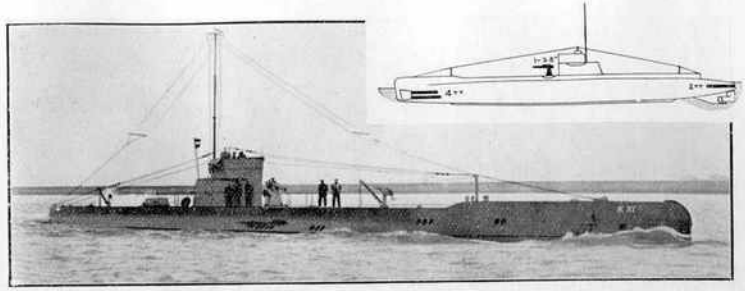
Submarines 30 + 1

O 12. 1932 *Photo, Chef. Kreuger.*

3 boats: ***O 12, O 13, O 14*** (K.M. de Schelde, 1931). Ordered 1927–28. Displacement: 553/715 tons. H.P. 1,800/600=15/8 kts. (Trials gave 16 kts. *surface* easily). Armament: **5** Tubes (20·9"), (**4** bow, **1** stern); **1**—2 pdr. pom disappearing in watertight tube in C.T. Radius: 3,500 miles at 10 kts.; 12 miles at 8 kts. Complement, 31.
1 boat: ***O 15*** (Fijenoord. Ordered 1929). Similar to above.
1 boat: ***O 16*** (Maatschappij "de Schelde") of a new type larger than *O* 15. Displacement: 820 tons. H.P. 2×1,600.

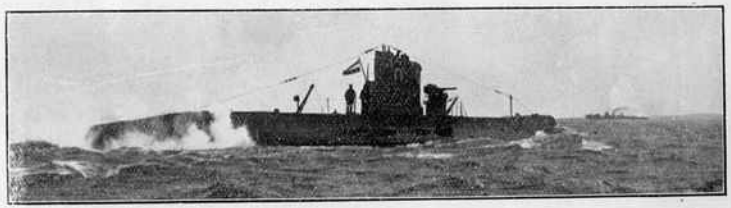
K XV. 1933 *Photo.*

3 boats: ***K XIV*** (July, '32.), ***XV*** (Dec. '32.), ***XVI*** (Apl. '33.), ordered 1929-30 Rotterdam Dry Dock Co.
2 boats: ***K XVII*** (July, '32.), ***XVIII*** (Sept. '32.), ordered 1929–30, M. Fijenoord.
Displacement: 765/1,020 tons (first 3); 777/1,040 tons (last 2). Dimensions of all: 242×21·3×12·5 feet. H.P. 3,200/1,000=17/9 kts. Armament: **8** Tubes (20·9") (**4** bow, **2** stern, **2** deck), **14** Torpedoes. Guns: 1—3·5", 2—2 pdr. poms. Radius: 3,500 miles at 11 kts., 26 miles at 8·5 kts. Complement, 38.
Note.—On Trials these boats have made 19 kts.

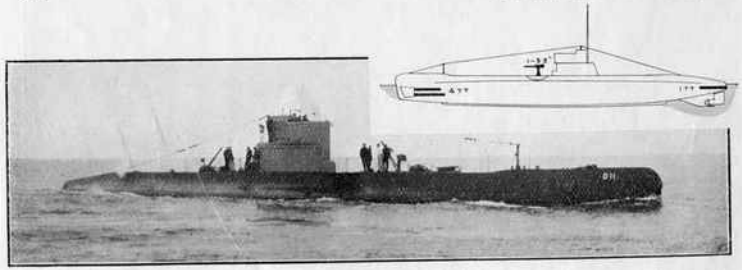


(**East Indies Marine.**) 1925 *Official Photo, by courtesy of Chief of Naval Staff, The Hague.*

3 *Navy* type: ***K XIII*** (Dec., 1924), ***K XII*** (Nov., 1924), ***K XI*** (April, 1924), all by M. Fijenoord. Rotterdam. Displacement: 612 tons *on surface*, 820 tons *submerged*. Dimensions: 219×20·2×12 feet. Engines: 2 sets M.A.N. Diesels, each 1,200 B.H.P.=15 kts. *surface* speed (17 kts. reached on trials). *Submerged* speed: 8 kts. Armament: **1**—3·5" AA., **1** M.G., and **2**—21 and **4**—17·7" Tubes (of which **4** are in bow and **2** at stern). **12** torpedoes carried. Complement, 31. Provided for under 1918 Naval Programme.
Note.—*K XIII* completed the voyage from Amsterdam to Surabaya, via the Panama Canal, unescorted, without mishap. Period occupied was from May 27 to Dec. 12, 1926.

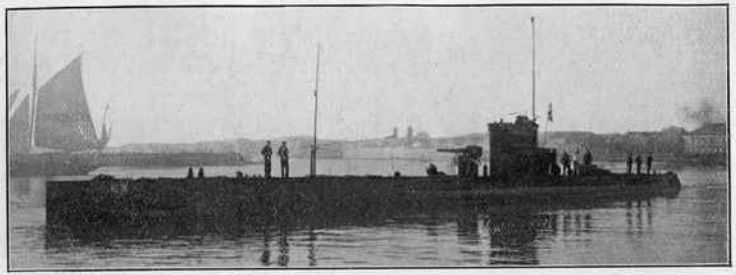


O 9. 1926 *Photo, R. F. Scheltema, Esq.*

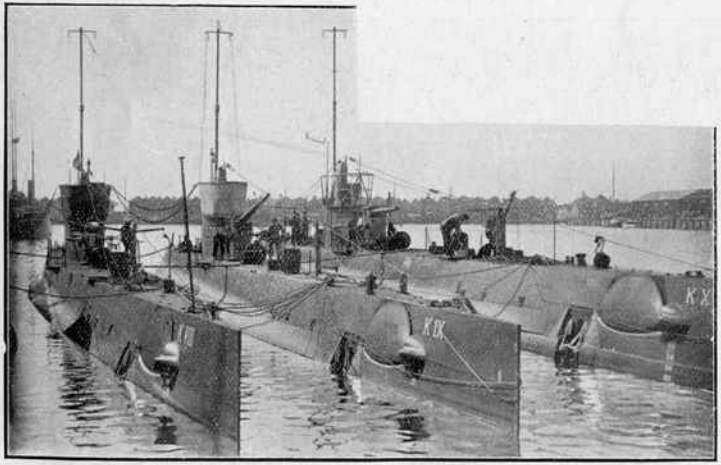


O 11. 1926 *Photo, by courtesy of Chief of Staff, The Hague.*

3 *Navy* (Home Service) type: ***O 11*** (M. Fijenoord, 19th March, 1925), ***O 10*** (Nederlandsche Scheepsbouw, 30th July, 1925), ***O 9*** (K. M. de Schelde, 1925). Displacement: 483 tons *on surface*, 657 tons *submerged*. Dimensions: 180×19×11½ feet. Engines: 2 sets Sulzer Diesels, each 450 B.H.P.=12 kts. *on surface*. *Submerged* speed: 8 kts. Armament: **1**—3·5" AA., **1** M.G., and **5** torpedo tubes (of which **2**—21" are in bow, **2**—17·7" bow, and **1**—17·7" stern). **10** torpedoes carried. Provided for under 1917 Programme. Complement, 29.



K X. 1926 *Photo, R. F. Scheltema, Esq.*



K VIII, IX, X. **(East Indies Marine.)** 1925 *Photo, by favour of R. F. Scheltema, Esq.*

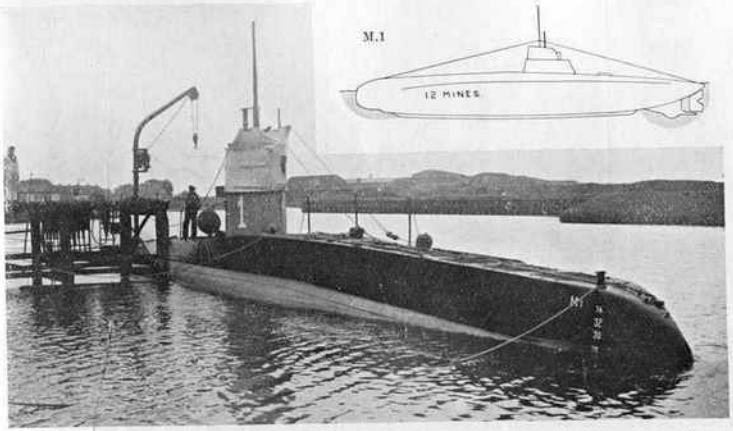
3 *Holland* type: ***K X*** (May, 1922), ***K IX*** (1922), and ***K VIII*** (1922), all by K. M. de Schelde. Displacements: 520 tons on *surface*, about 715 tons *submerged*. Dimensions: 211 × 18½ × 12 feet. Armament: **1**—3·5 inch AA. **1**, M.G. **4**—17·7 inch tubes. Machinery: *K VIII* has two sets of 700 B.H.P Diesel engines, M.A.N. type while *K IX* and *K X* have 2 Schelde-Sulzer Type of 775 h.p. each for a *surface* speed of 15 kts. (16 reached *on trials*). Electric motors B.H.P. 630 = 8 kts. *Submerged* speed, Endurance about 3500 miles at 11 kts. *on surface*. 26 miles at 8.5 kts., submerged. Complement, 31.

K V in East Indies. **(East Indies Marine.)** 1921 *Photo by courtesy of the Chief of Naval Staff, Batavia.*

3 *Hay-Denny* type: ***K VII*** (launched Mar. 8th, 1920), ***K VI*** (launched 1920) and ***K V*** (launched 1919). All by M. Fijencord, Rotterdam.
Dimensions: 177 × 16·7 × 12·5. Machinery: 2 × 600 H.P. Sulzer = 15 kts.
Submerged speed 8 kts. Guns: 1—75 mm., 1 M.G., 4—17·7" tubes in boat; 2 deck.
Begun 1916. *K V* completed 1921, *K VI* completed 1921, *K VII* completed 1922.

K III on trials. **(East Indies Marine.)** 1920 *Photo, by courtesy of M. F. Hay, Esq.*

2 *Holland* type: ***K IV*** (1920) and ***K III*** (1919). Both by K. M. de Schelde, Flushing. Displacement: 520 tons *on surface*, 715 tons *submerged*. Dimensions: 211½ × 18½ × 11½ feet. Armament: **1**—13 pdr., **1** M.G., and **6**—17·7" torpedo tubes. Designed *surface* speed 15 kts. Machinery: *K III* has 2 sets of 700 B.H.P. M.A.N. (completed by K. M. de Schelde) and *K IV* has 2 sets of 600 B.H.P. Sulzer engines. Electric motors B.H.P. 1,200 = 8 kts. Endurance: 3,500 miles at 11 kts. *on surface*. Complement, 31.



1932 *Photo.*

1 *Werner* type: ***M 1*** (ex-German mine-laying submarine *UC 8*, Vulkan, Hamburg, 1915, stranded on Terschelling Island, Nov., 1915, salved, interned and purchased by Dutch Government, 1917). Displacements: 164 tons *surface*, 180 tons *submerged*. Dimensions: 111½ × 10½ × 9¼ feet. Guns: 1 machine. No torpedo tubes but carries 12 mines in 6 mine-laying tubes before conning tower. Machinery: 1—4 cyl. Daimler H.P. 96 = 5·6 kts. (7·5 kts. for short periods with electric motors), on *surface*: *max. submerged* speed: 5·7 kts. (1 hour). Endurance: 1050 miles at 5 kts. on *surface*; 50 miles at 2½ kts. *submerged*.

O 8. 1918 *Photo, Fotopersbureau "Holland."*

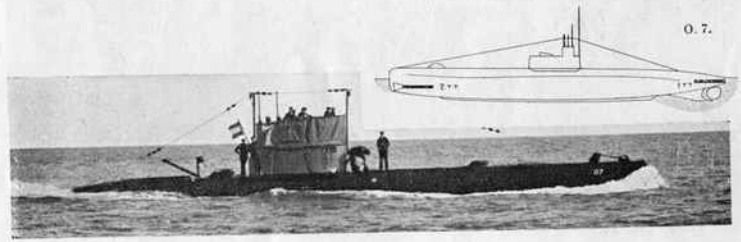
1 *Holland* type: ***O 8*** (ex-British submarine *H 6*), built by Canadian Vickers Co., Montreal, 1915, wrecked on Schiermonnikoog Island, Jan., 1916, salved Feb., 1916, interned at Nieuwediep, and subsequently purchased by Dutch Government. Displacements: 341 tons on *surface*, 440 tons *submerged*. Dimensions: 146·5 × 16 × 12½ feet. Armament: 4—18 inch tubes. Guns: 1—37mm. Machinery: 8 cyl. Nelseco* Diesels H.P. 300 × 2 = 12 kts. on *surface*; *submerged* speed 8 kts. Fuel: 16 tons oil carried. Complement, 26.

*"Nelseco" is trade mark for engines manufactured by the New London Ship & Engine Co., Groton, Conn., U.S.A. Their engines are the German M.A.N. (Nuremberg) type built under licence.

K II. **(For East Indies Marine.)** 1921 *Photo, by courtesy of R. F. Scheltema, Esq.*

1 *Hay-Denny* type: ***K II*** (launched 1919.) By M. Fijenoord, Rotterdam. Displacements: 507 tons *on surface*, 610 tons *submerged*. Dimensions: 172 × 16½ × 12·5 feet. Armament: 1—13 pdr. AA., 1—M.G. and 6—17·7 inch torpedo tubes, of which two are on revolving twin deck mount within superstructure and before C.T., and are normally closed by sliding doors covering tube ports. Machinery: 2 sets, 8-cyl. 700 B.H.P. M.A.N.* Diesel engines = 15 kts. *on surface*. *Max. submerged* speed 8 kts. Endurance: 3500 miles (*normal*), 5500 miles (*extreme*), at 11 kts. *on surface*; 3 hours continuous running at 8½ kts. *submerged*. Begun 1915, completed 1921. Complement 31.

O. 7.



1932 *Photo, Chef. Kreuger.*

1 *Hay-Denny* type: ***O 7*** (M. Fijenoord, Rotterdam, 1916). Displacements: 168 tons *on surface*, 210 tons *submerged*. Dimensions: 112 × 12·5 × 95 feet. 3—17·7 inch torpedo tubes 1—M.G. Machinery: 1 set 6 cyl. M.A.N. Diesel H.P. 350 = 11 kts. *on surface*. *Submerged* speed 8 kts. Endurance: 750 miles at 10 kts. *on surface*; 3 hours continuous running *submerged* at 8½ kts.

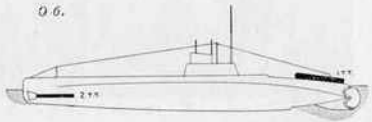
SUBMARINES AND SLOOPS.

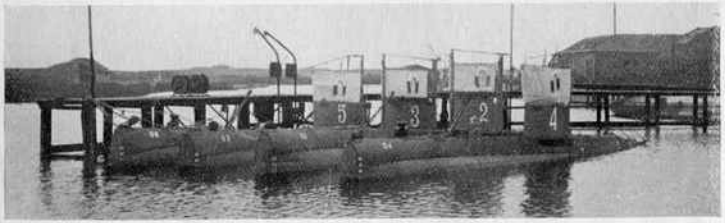
Submarines—*continued.*

1918 *Photo, Fotopersbureau "Holland."*

1 *Holland* type: **O 6** (K. M. de Schelde, Flushing, 1916). Displacements: 181 tons *on surface*: 230 tons *submerged*. Dimensions: 112¼ × 12 × 9¼ feet. **3**—17·7 inch torpedo tubes. **1**—M.G. 1 set of 6-cyl. M.A.N. Diesel engines H.P. 350 = 12 kts. *on surface*; *submerged* speed, 8 kts. Endurance as *O 7*. Complement, 15.

O 6.



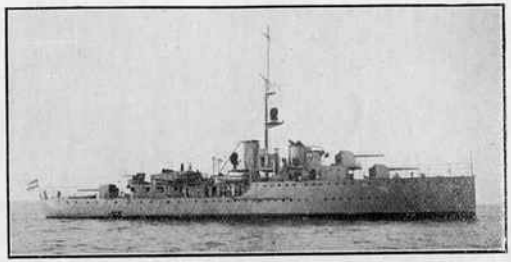


1930 *Photo, by courtesy of Ministry of Defence.*

2 *Holland* type: **O 4** and **O 5** (both 1913). All built by K. M. de Schelde, Flushing. Displacements: 130 tons *on surface*, 150 tons *submerged*. Dimensions: 98·4 × 9¼ × 9 feet. Armament: **2**—17·7 inch tubes (a spare torpedo carried for each). 1—M.G. Machinery: 1 set 6-cyl. M.A.N. Diesel engines H.P. 350 = 11 kts. *Submerged* speed 8 kts. Endurance: 500 miles at 10 kts. *on surface*; 3 hours continuous running at 8½ kts. *submerged*. Complement, 10.

O 2, *O 3* scrapped 1932.

Sloops (*Flottieljevaartuigen*).



SOEMBA. 1926 *Photo, by courtesy of Chief of Naval Staff.*

FLORES (15th Aug., 1925), **SOEMBA** (24th Aug., 1925). Built at Rotterdam by M. Fijenoord and Wiltons, respectively. Displacement: 1457 tons. Dimensions: 248 × 37¼ × 11¾ feet. Guns: **3**—5.9 inch, **1**—3 inch AA., **6** M.G. Machinery: 2 sets triple expansion, H.P. 2000 = 15 kts. 4 Yarrow boilers. Oil: 285 tons. Complement, 132.

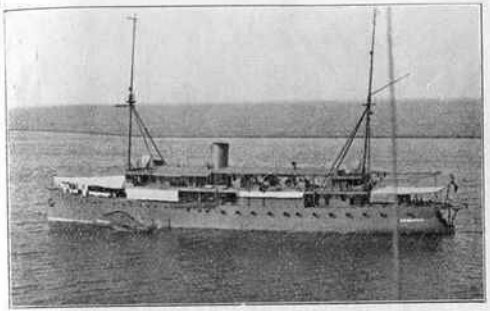
Note.—These Vessels, which are intended for the defence of the Minefields at Surabaya, have 1" armoured deck and C.T. They are fitted with Flettner rudders, and have accommodation for a seaplane.

1933, *Photo,*

JOHAN MAURITS VAN NASSAU (built at Rotterdam Aug. 20, 1932).
Displacement: 1,520 tons. Dimensions: 258 × 38 × 12·3 feet.
Guns: **3**—5·9", **1**—3" AA., **4**—2 pdr. poms., **4** M.G.
H.P. 2,100 = 15 kts. Oil: 273 tons.
Complement, 124.

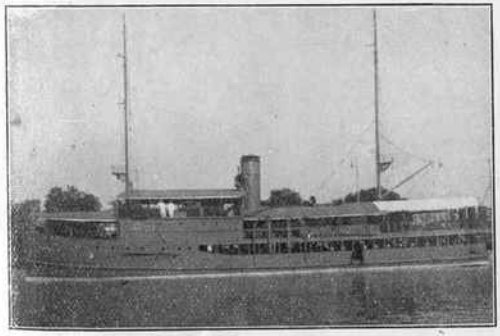
Note.—Has electrically welded armoured deck and ordinary balanced rudder.

Mine Layers (*Mijnenleggers*).



KRAKATAU refitted. 1929 *Photo, by courtesy of Chief of Naval Staff.*

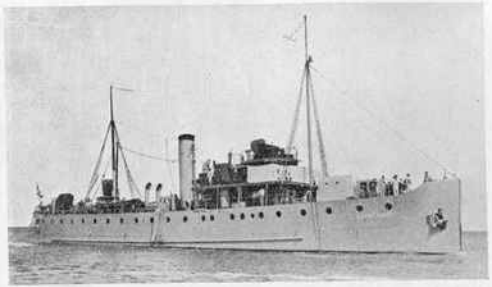
KRAKATAU (Surabaya D.Y., 1924). Displacement, 982 tons. Dimensions: 213 × 34½ × 10½ feet. Guns: **2**—3 inch AA., **4** M.G. H.P. 2500 = 15·5 kts. Complement, 91. Can carry 150/200 Mines. Reconstructed 1928, after funnel being removed.



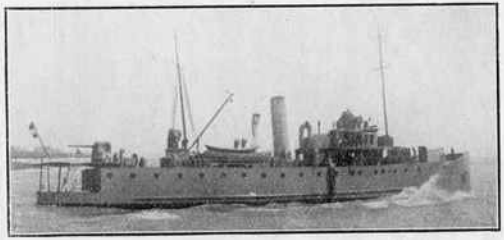
PRO PATRIA. 1926 *Photo, by courtesy of Chief of Naval Staff.*

PRO PATRIA (Surabaya D.Y., July 21, 1922). Displacement, 537 tons. Dimensions: 154 × 28¼ × 9¼ feet. Guns: **1**—3 inch AA., **2** M.G. H.P. 650 = 10 kts. Reported to carry 80 mines of the latest type. Complement 61.

Mine Layers—*continued.*



DOUWE AUKES. 1933 *Photo.*

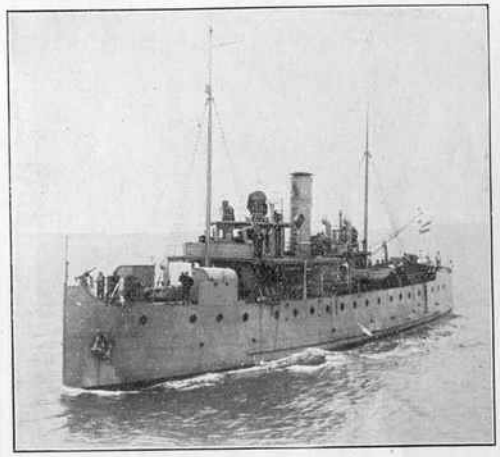


VAN MEERLANT. 1926 *Photo, by courtesy of Chief of Naval Staff.*

VAN MEERLANT (Nov. 24th, 1920), **DOUWE AUKES** (Feb. 23rd, 1922). First built under 1917 Naval Programme and the second under 1918 Naval Programme, by Werf Gusto, Schiedam. **687** tons. Dimensions: 180·5 × 28·5 × 10·4 feet. Guns: **3**—13 pdr. AA., semi-auto. "No. 4." **2** M.G. Twin screws. Engines: 2 sets triple exp. surface condensation. I.H.P. 1000 = 13 kts. Coal: **115** tons. Complement, 60.

Of the same type as *Hydra* and *Medusa* (see next column), but faster and carry 60 mines. 2 steam winches for handling mines and double laying gears.

Mine Layers—*continued.*



1918 *Photo, Fotopersbureau "Holland."*

HYDRA (1911) & **MEDUSA** (1911). Both built at Amsterdam D.Y. **593** tons. Complement, 53. Dimensions: 163 × 29·5 × 9 feet. Guns: **2** 13 pdr AA. **1**—13 pdr. S.A., **1** M.G. Designed H.P. 800 = 12 kts. Coal: **72** tons. Radius of action: 1440 miles at 6 kts. Each carries double laying gears for 70 mines.

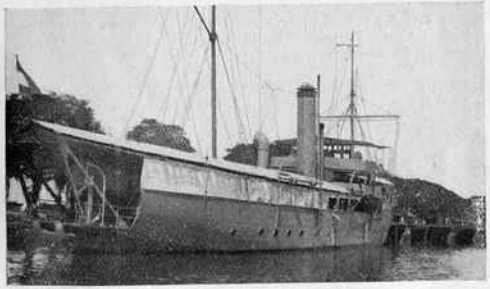
Note.—*Hydra* sank off the "Wielingen" Light Ship by collision with T.B. *Z 3*, Feb., 1921; salved April, 1921 and again in service.

(*Continued on next page.*)

NETHERLANDS—Mine Layers

Mine Layers—*continued.*

HERKULES (Surabaya D.Y., 1910). Tug of 188 tons. Dimensions: 102·8 × 13·4 × 8·4 feet. Guns: 1—1 pdr. 20 mines carried. I.H.P. 400 = 10·2 kts. 1 screw. Oil fuel: 45¾ tons = 2218 miles at 10 kts. Complement, 20.

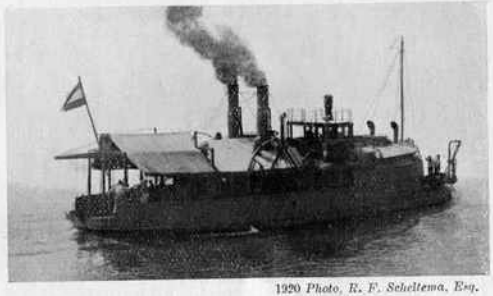


SERDANG (1897). 680 tons. About 173·2 × 31·2 × 12 feet average. Armament: 1—3" AA., 2—1 pdrs., 1 M.G. I.H.P. 1,290 = 13 kts. Coal: 150 tons. Complement: 97 (55 Europeans, 42 natives). Tender to Torpedo Service. Double laying gear fitted.

Mine Layers—*continued.*

1930 *Photo, by courtesy of Ministry of Defence.*

NAUTILUS (Oct. 30th, 1929). Built by Rotterdam Dry Dock Co. Displacement: 800 tons. Dimensions: 180½ (*p.p.*), 191½ (*o.a.*) × 31 × 11½ feet. Guns: 2—75 mm., 1—37 mm., 2—40 mm. pom-poms. H.P. 1,350 = 14 kts. Oil: 138 tons. Complement, 50. (This vessel is used on Fishery Protection duties. She can be fitted to carry 100 mines. The 3" guns not mounted at present.)



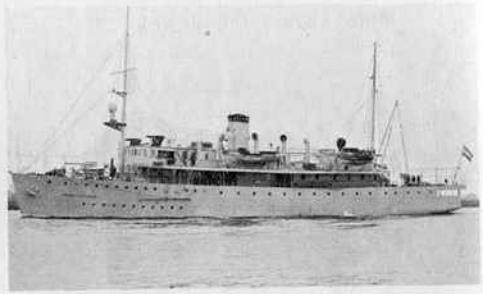
1929 *Photo, R. F. Scheltema, Esq.*

THOR (1877), **VIDAR, BULGIA** and **HADDA** (1879), ex-gunboats of 223–244 tons. Complement, 34–36. Guns: 2—4 pdr. (semi auto) in *Hadda*, 2—1 pdr. in *Vidar* and *Thor*; 1 M.G. in all four. Speed: 7 kts. Coal: 30 tons. Double mine laying gears in all for 30 mines;

And of similar appearance;

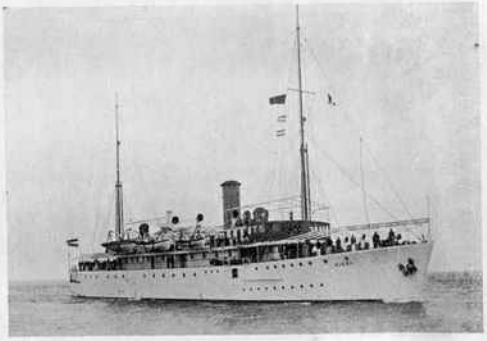
HAVIK (1874). Ex-gunboat of 181 tons. Guns: 2—2·3 cm., 1 M.G. Speed: H.P. 120 = 7 kts. Complement, 30. Coal: 18 tons. *Balder* used for Harbour Training Service. Can carry 24 mines.

Mine Layers—*continued.*



1932 *Photo.*

PRINS VAN ORANJE, GOUDEN LEEUW, (1931), at Rotterdam ("Maas"). Displacement: 1,291 tons. Dimensions: 216 × 36 × 11 feet. Guns: 2—3" AA. 2—2 pdr. poms. 2 M.G. H.P. 1,750 = 15 kts. Reported to carry 200–250 mines.



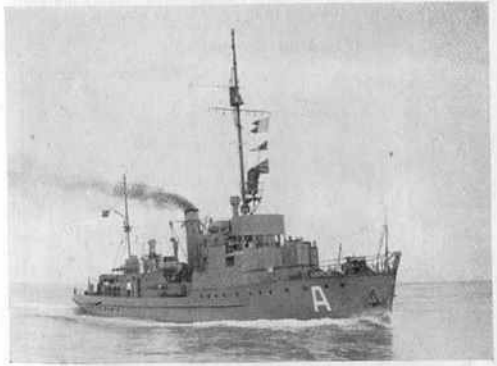
1932 *Photo.*

RIGEL (Nederlandsche Dok Mij, 1929). Displacement: 1,580 tons. Guns: may carry 2—3". 2 poms. H.P. 1,400 = 12·5 kts. Complement, 66. Reported to carry 160 mines. Specially fitted for use of the Governor-General of East Indies.

Mine Sweepers. (*Mijnenvegers.*)

1921 *Illustration.*

I (Van der Kuyk en Ree, Rotterdam) 238 tons. **II** (Koopman, Dordrecht), 205 tons. **III, IV** (v.d. Schuyt, Papendrecht), both 230 tons. Completed and taken over in 1916. Steel. Guns: **1** machine. Complement, 16. Bow gear now removed.



1930 *Photo, by courtesy of Ministry of Defence.*

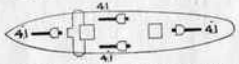
A, B, C, D. (Willemsoord D.Y.) Completed 1930. Displacement: 179 tons. Dimensions: 140·5 × 19·7 × 4·9 feet. H.P. 700 = 14·5 kts. Complement, 30. Oil: 40 tons.

"Armoured" Gunboats (*Pantserbooten*).

BRINIO. 1921 *Photo, R. F. Scheltema, Esq.*

FRISO.

GRUNO.



BRINIO (1912), **FRISO** (1912), **GRUNO** (1913). All built by Amsterdam D.Y. 540 tons. Complement, 52. Dimensions: 172·2 (*o.a.*) × 27·9 × 9·1 feet *max.* draught. Armament: **4**—4·1 inch semi-automatic, **2** machine. Armour: 2" Belt, $\frac{3}{4}$" Deck, 2" Conning tower. Machinery: 2 sets Diesel engines (Sulzer or M.A.N.) B.H.P. 2 × 750 = 14 kts. Oil, 34 tons. Complement, 63.

These vessels are intended to guard mine fields.

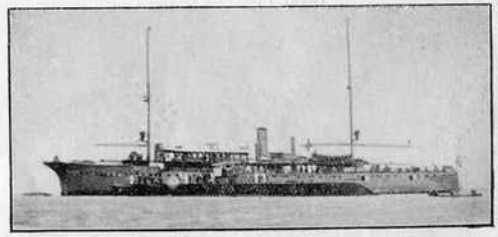
Old Gunboats.

(Mostly employed as Harbour Tenders, or for Training purposes.)

HEFRING. 1921 *Photo, R. F. Scheltema, Esq.*

BALDER, BRAGA, HEFRING, TYR, FREIJR. Are old iron twin-screw Gunboats, built 1876-79. 240 tons. Complements, 34–30. Dimensions: 91·5 to 91·8 (*o.a.*) × 26·9 × 7·8 to 8·1 feet (*max.* draught). Guns: In *Braga, Hefring*, **1**—4·7 inch, **2**—1 pdr., **1** machine. In *Freijr*, **1**—3 inch, **3**—1 pdr. M.G. In *Tyr*, **3**—1 pdrs., 1 M.G. H.P. 100 to 170 = 7 to 8 kts. Coal: 30 tons.

Submarine Depot Ships (*Depotschepen voor Onderzeebooten*).



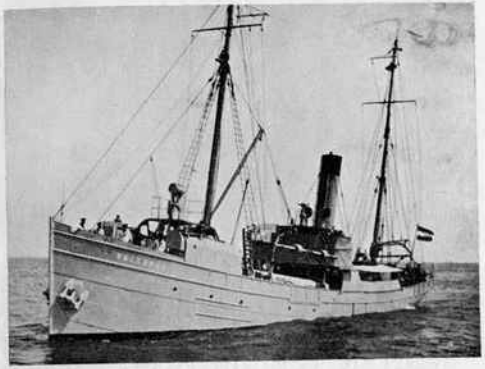
1925 *Photo, R. F. Scheltema, Esq.*

PELIKAAN (Nederland S. B. Co., Amsterdam, Dec. 31st, 1921). 2165 tons. Dimensions: 307 (*o.a.*) × 42½ × 13 feet. Guns: **4**—3 in. (semi-auto) "No. 4," **4** M.G. M.A.N. Diesel Engines. H.P. 1400 = 12 kts. (electric drive). 2 screws. Oil fuel: 500 tons. Complement, 92. Provided for by 1918 Naval Programme. To carry 2 aeroplanes, stores for 6 submarines, and crews for **4** submarines. Workshops fully equipped for all ordinary repairs. Laid down, 1919; completed, 1922. 4 planes added to equipment since completion. Training ship for native personnel. 1933.

BB

Fishery Protection Vessel.

(*Mine-layer*).



1932 *Photo.*

VULCANUS (Grimsby, 1902). Ex-steam trawler *Azalea*, 319 tons. Complement, 34. 123·7 × 21·6 × 10·5 feet. Guns: 3—1 pdr., 1 M.G. H.P. 275=10 kts. Coal: 60 tons. Double laying gear for 30 mines.

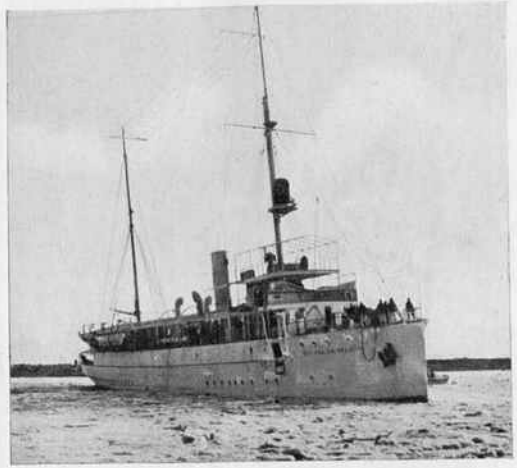
Customs Patrol Vessels.

(Gouvernements Marine.)

AREND. 1933 *Photo.*

AREND (May 21st, 1929), **VALK** (Oct. 19th, 1929). Laid down 1928 by Fijenoord Co., for opium smuggling prevention in E. Indies. Displacement: 748 tons. Dimensions: 236½ × 29½ × 9 feet. H.P. 3350=18 kts. Guns: 2—3 inch. May carry a seaplane each. *Note.*—Meaning of these names is "Eagle" and "Falcon." These vessels served for a time as Sloops but have now reverted to their original duties and guns may no longer be mounted.

Surveying Ships.



1930 *Photo, by courtesy of Ministry of Defence.*

WILLEBRORD SNELLIUS (Fijenoord Co., Aug. 14th, 1928.) Displacement: 930 tons. Dimensions: 190 (*p.p.*). 203½ (*o.a.*) × 31½ × 11¼ feet. H.P. 525 = 10.5 kts. Oil: 190 tons. Guns: 2—1 pdrs., 2 M.G. Complement, 85.

Photo Wanted.

TYDEMAN (Surabaya D.Y., 1916). 1160 tons. Dimensions: 226·4 × 32·8 × 11·8 feet. Guns: 2—1 pdrs. Diesels: H.P. 700=10 kts. 2 screws. Oil: 194 tons. Complement, 104.

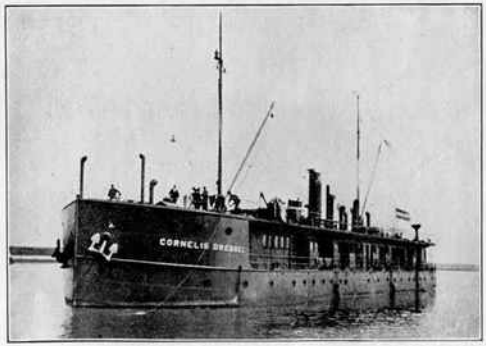
Surveying Ships.

EILERTS DE HAAN 1932 *Photo, Chef Kreuger*

EILERTS DE HAAN (25th June, 1919). Fijenoord Co. Rotterdam. 312 tons. Dimensions: 147·3 × 21·9 × 7 feet. No guns. Designed H.P. 600 = 12 kts. Coal: 44 tons. Complement, 18. Begun under 1915 Naval Programme. Completed May, 1921.

HYDROGRAAF (1911). 300 tons. Dimensions: 132·7 × 21·9 × 9·6 feet. Guns: none I.H.P. 360=9 kts. Coal: 30 tons. Complement, 18. (Similar in appearance to above).

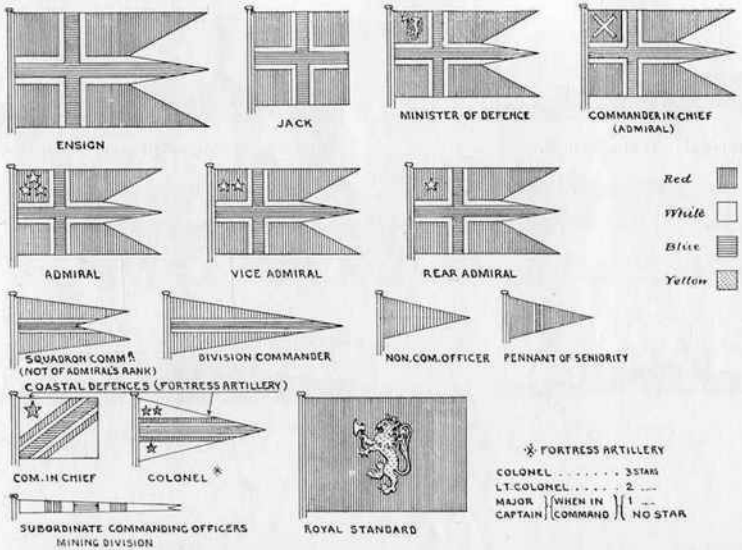
(Floating Workshop).

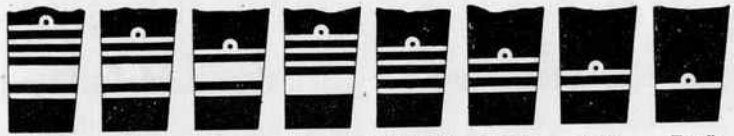


CORNELIS DREBBEL (1915). 668 tons. Dimensions: 166·8 × 32·8 × 6·8 feet. Guns: 1—1 pdr. Diesel engines. B.H.P. 170=6 kts. Oil fuel: 71 tons. Complement, 75.

NORWAY.

(Revised, 1933, from information supplied by courtesy of H.E. the Minister of Defence.)





British equivalents.	Admiral.	Vice-Admiral.	Kontre-Admiral	Kommandör.	Kommandör-Kaptein.	Kaptein.	Löitnant.	Fenrik.
	Admiral.	*Vice-Ad.*	*Rear-Ad.*	*Commodore.*	*Captain.*	*Commander.*	*Lieut-Com. & Lieut.*	*Sub-Lieut.*

In relative rank Doctors have the same *without curl*, and a *red* passe poil above upper stripe.
" " Paymasters " " " *blue* " " "
" " Warrant Officers " " " and with various branch marks above upper stripe.

General Notes.—Personnel: About 850 permanent, 700 yearly conscripts, all seafaring men in reserve.

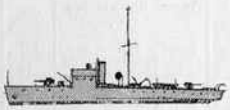
Mercantile Marine.—(From "Lloyd's Register," 1933). 1965 Vessels of 4,078,133 gross Tonnage.

Modern Guns (Armstrong and Bofors). (Details officially revised 1930.)

Notation.	Designation		Length in calibres	Model. *	Weight of Gun.	Weight of A.P. shot.	Initial velocity	*Max.* penetration firing A.P. capped at K.C.		Danger Space against average warship, at			Nom. Rounds per minute
								5000 yards.	3000 yards.	10,000 yards	5000 yards.	3000 yards.	
MEDIUM.	c/m.	inches.			tons.	lbs.	ft. secs.						
	20·9	8·2	44	A	18½	309	2300	6½	9¼	100	405	594	4
	14·91	5·9	46	A	7	100	2625	3	4½	67	215	440	8
	12	4·7	44	A	2¾	44	2570	...	...	...	...	...	10
LIGHT.	*10·16*	4	40	B	2	32	2545	...	...	...	...	...	20
	7·6	3	50	B	1	12	2820	...	...	...	...	...	...
	7·6	3	40	A	⅝	12	2210	...	...	...	...	...	...
	7·6	3†	25	B	⅝	12	1640	...	...	...	...	...	...
	7·6	3†	21	B	½	12	1500	...	...	...	...	...	...

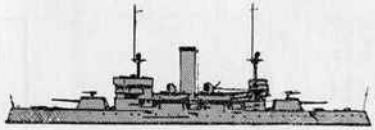
* B=Bofors. A=Armstrong. † Anti Aircraft. There is also a 3 pdr. AA. gun and a 9 pdr. gun.

Minister of Defence.—Mr. J. I. Kobro. *Chief of Naval Staff.*—Rear-Admiral Jak. v. d. Lippe.
Naval Attaché, London.—.....
Colour of Ships: Coast Defence Ships, Destroyers, Torpedo Boats, Gunboats, &c., all light grey.



GLOMMEN. LAUGEN.

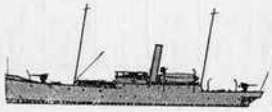
GOR.



H. HAARFAGRE. TORDENSKJOLD.

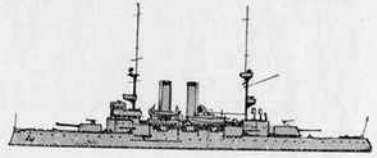
FRIDTJOF NANSEN.

HEIMDAL.



FARM.

FROYA.

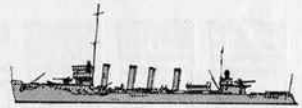


NORGE. EIDSVOLD.

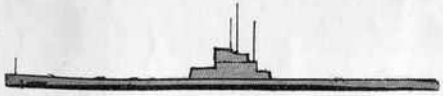
SNOGG. STEGG. TRYGG.

LAKS *class* (8).

KJELL. SKARV. TEIST.

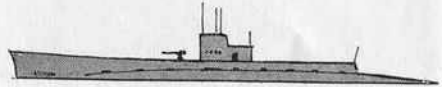


GARM. TROLL. DRAUG.

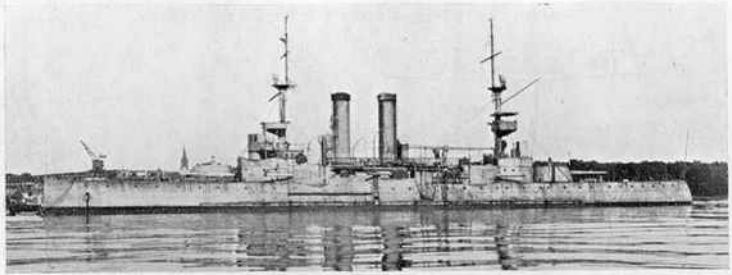


"A" *class.*

"B" 1—4



"B" 5—6



1933 *Photo, Official.*

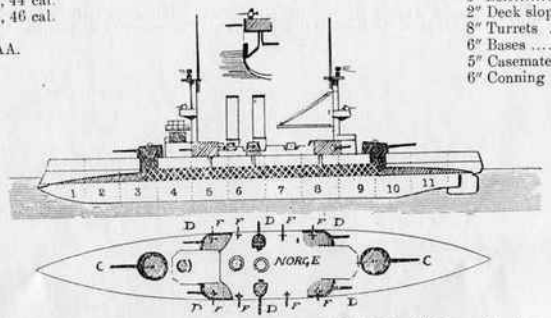
NORGE (March, 1900), EIDSVOLD (June, 1900).

Displacement, 4166 tons. Complement, 270.

Length (*p.p.*), 290 feet. Length (*over all*), 301¼ feet. Beam, 50½ feet. *Max.* draught, 17⅔ feet.

Guns:
2—8·2 inch, 44 cal.
6—5·9 inch, 46 cal.
8—12 pdr.
2—3 pdr. AA.

Armour (Krupp):
6″ Belt.....
2″ Deck slopes ...
8″ Turrets .....
6″ Bases .....
5″ Casemates (NC)
6″ Conning tower

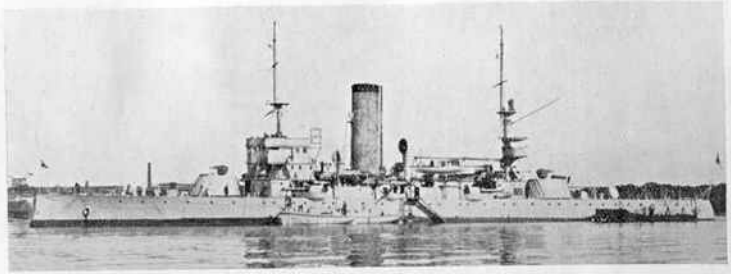


Ahead:
1—8·2 in.
2—5·9 in.

Astern:
1—8·2 in.
2—5·9 in.

Machinery: 2 screws. Boilers: 6 Yarrow. Designed H.P. 4500=16·5 kts. Coal: *normal* 440 tons; *maximum* 550 tons.

Notes.—Built by Armstrong. Completed 1900–1901. Machinery by Hawthorn, Leslie & Co. Excellent seaboats, and still good for 15 kts. On plans C=8·2 inch guns; D=5·9 inch; F=12 pdr. guns.



TORDENSKJOLD. 1933 *Photo, Official.*

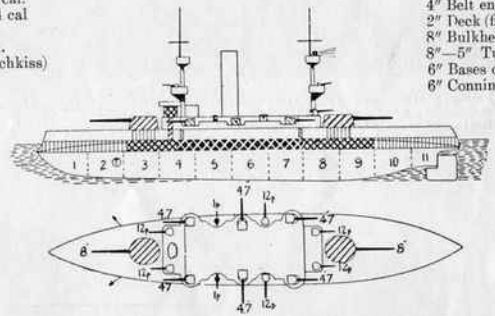
HARALD HAARFAGRE (Jan., 1897), TORDENSKJOLD (March, 1897).

Displacement, 3858 tons Complement, 249.

Length (*p.p.*), 279 feet. Length (*over all*), 304 feet. Beam, 48½ feet. *Maximum* draught, 17⅔ feet. *Mean* draught, 16½ feet.

Guns (Armstrong):
2—8·2 inch, 44 cal.
6—4·7 inch, 44 cal
6—12 pdr.
2—12 pdr. AA.
2—1 pdr. (Hotchkiss)

Armour (Harvey):
7″ Belt (amidships)
4″ Belt ends .....
2″ Deck (flat on belt)
8″ Bulkheads .....
8″—5″ Turrets ...
6″ Bases of turrets
6″ Conning tower



Ahead:
1—8·2 in.
2—4·7 in.

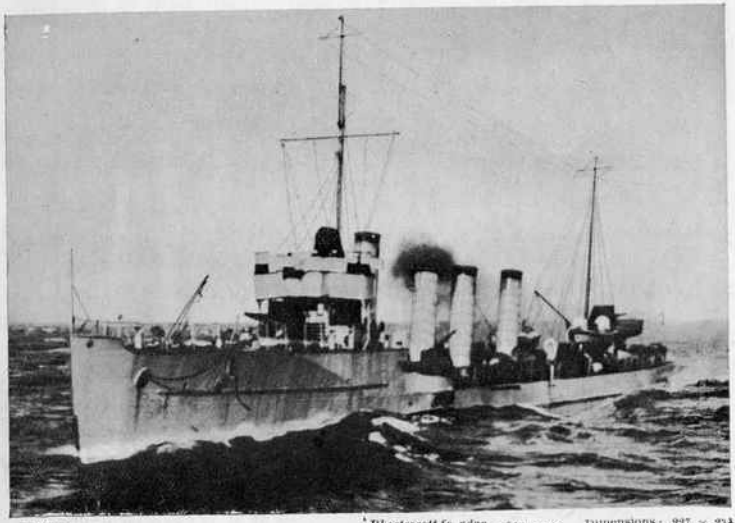
Astern:
1—8·2 in.
2—4·7 in.

Machinery: Boilers: 3 cylindrical. 2 screws. Designed H.P. 4500=16·9 kts. (made 17·2 on *trial*, 1897-8). Coal: *normal* 400 tons; *maximum* 540 tons.

Notes.—Built by Armstrong, and completed 1897–8. Engines by Hawthorn, Leslie & Co. Belt is 174 feet long by 6½ feet deep. Excellent seaboats, good for 14 kts. still.

Note.—Tordenskjold is employed as Cadets' Training Ship.

3 Destroyers (*Torpedobaatsjagere*).



TROLL

Phooteoeeft fo adae - 540 tons. Dimensions: 227 × 23½ × 8½ feet. Armament: **6**—12 pdr., **3**—18 in. tubes. H.P. 7500 (8000 µ *Garm*) = 27 kts. Reciprocating engines in last two, turbines in *Garm*. Coal: 95 tons. Complement, 76.

GARM.

(Funnels raised and graded.)

25 Torpedo Boats.

"Large Torpedo Boats" (*Större Torpedobaater*).

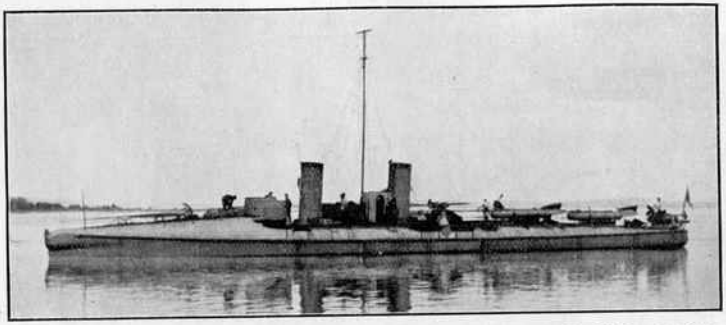
Photo, by favour of "Flottes de Combat."

3 boats: ***Snögg, Stegg, Trygg*** (Horten, 1916-17). 220 tons. Dimensions: 173·9 × 18 × 5·2 feet. Guns: **2**—12 pdr. Tubes: **4**—18 inch. Designed H.P. 3500 = 25 kts. Fuel capacity: 30 tons oil. Complement, 33.

SNÖGG.

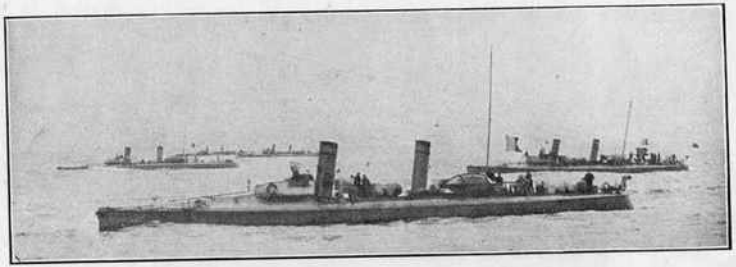
1930 *Photo, by courtesy of the Ministry of Defence.*

2nd Class Torpedo Boats (*Torpedobaater av II Kl.*).



SKARV. 1925 *Photo, by favour of the Ministry of Defence.*

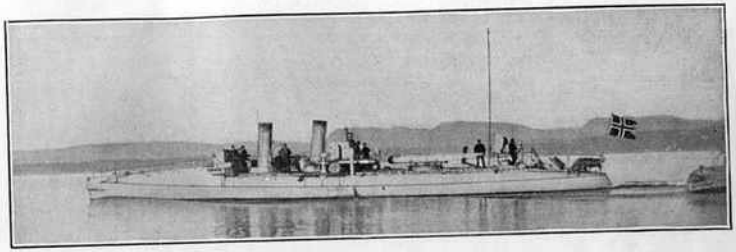
3 boats: ***Kjell*** (1912), 94 tons; ***Skarv, Teist*** (Karljohansvern, Horten, 1907-08). 92 tons. *Skarv, Teist*, **2**—3 pdr. guns. *Kjell* **1**—12 pdr. In all three boats, **3**—18 inch tubes, one bow and two deck aft. Speed of all three boats, 25 kts. H.P. 1700. Coal: 16 tons. Complement, 21.



6 boats: ***Laks, Sild, Sael, Skrei*** (1900). 90 tons and 21 kts. ***Brand, Storm*** (1899). 20 kts. 79 tons. 1918 *Photo, Wilse, Oslo.*

All armed with **2**—1 pdr. guns and **2**—18 inch tubes on deck. Others by Karl-Johansverns Verksted, Horten. H.P. 1000. Complement, 19. Coal: 17 tons. Last built by Schichau, Elbing.

2nd Class Torpedo Boats—*continued.*

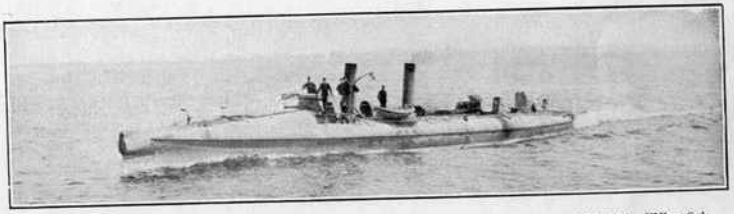


GRIB, JO, LOM, ÖRN, RAVN, as above photo. 1918 *Photo, Wilse, Oslo.*

5 boats: ***Grib, Jo, Lom*** (1906) and ***Örn, Ravn*** (1904). All 70 tons, and about 22—23 kts. Guns: **2**—1 pdr. but *Lom* has **2**—3 pdr. Complement, 16.

Note.—All above 5 boats have **2**—18 inch tubes, viz., 1 bow and 1 deck. All built in Norway.

Patrol Boats.



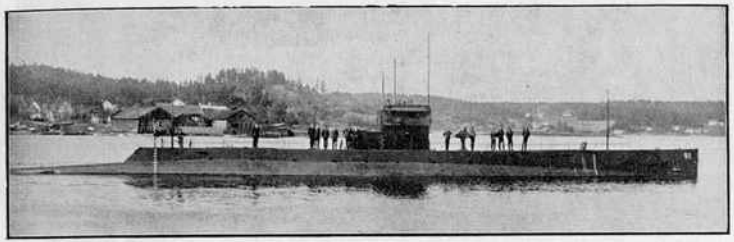
1918 *Photo, Wilse, Oslo.*

4 boats: ***Hauk, Falk*** (1903), 63 tons; ***Hvas, Kjæk*** (1900), 64 tons. All have **2**—1 pdr. and **2** tubes (1 bow and 1 deck). First two 20 kts., others 19 kts. Complement, 14. Built in Norway.
1 boat: ***Hval*** (1896), 79 tons. **2**—1 pdr. 19 Kts. Complement, 19.

(Same appearance as "Hauk," &c., above, but shorter funnels.)

3 boats: ***Kvik*** (1897-98), 67 tons. ***Blink, Lyn*** (1896), 45 tons. All three boats 19 kts. speed. Guns: **2**—1 pdr. Complements, 14 for all. Built in Norway.

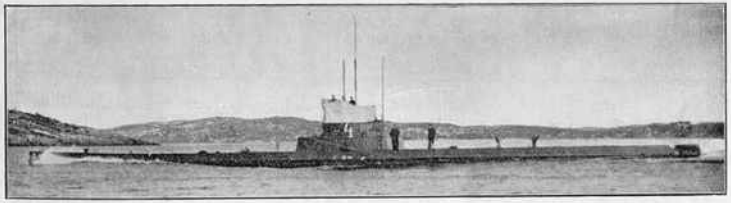
9 Submarines *(Undervandsbaater).*



B 2. 1925 *Photo, by favour of the Ministry of Defence.*

6 *Holland* type: ***B 1*** (1923), ***B 2*** (1 Oct., 1924), ***B 3*** (1926), ***B 4*** (1 May, 1927), ***B 5*** (17 June, 1929), ***B 6*** (August, 1929) (all built at Horten). 420 tons *on surface* 545 tons *submerged*. H.P. 900 = 14¼ kts. *on surface*, 700 = 9¼ kts. *when submerged*. Dimensions: 107¼ × 17½ × 11½ feet. Sulzer type Diesel engines, built at Horten. Electric motors built in Norway. Armament: **1**—12 pdr., **4**—18 inch torpedo tubes (2 bow, 2 stern). Complement, 23. Laid down 1915. *B 1* completed 1923, and reported to have been very successful, maintaining a speed of 14·5 kts. on trial. *B 2* completed in 1924, *B 3* in 1926, *B 4* in 1927. *B 5*, *B 6* both laid down in Dec. 1925, and completed in 1929 and 1930 respectively.

B 1—6



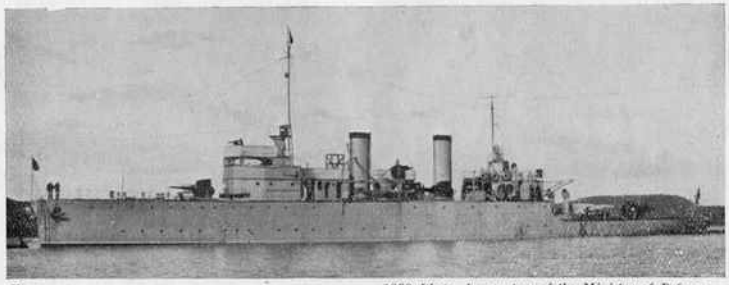
A 4. *Photo added* 1924.

3 *Krupp-Germania* type: ***A4-A2*** (all 1914). 250 tons *on surface*, 335 tons *submerged*. H.P. 700 = 14¼ kts. *on surface* 380 = 9 kts. *submerged*. Complement, 15. Dimensions: 152¼ × 16¼ × 9¼ feet. Surface engines: Krupp-Diesel, **3**—18 inch tubes, 1 bow, 2 stern. **4** torpedoes carried.

Note.—*A5* completing at Kiel, was appropriated by Germany on outbreak of war and became the German *UA*. Was surrendered at Harwich with other German Submarines; ceded to France for experiments, and demolished at Toulon, 1920-1.

A 2—4.

Mine Layers.



FROYA. 1930 *Photo, by courtesy of the Ministry of Defence.*

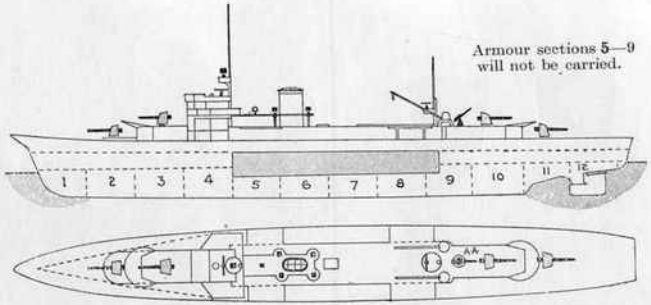
FROYA (1916). 755 tons. Complement, 79. Dimensions: 248·7 × 27 × 8·2 feet. Guns: **4**—4 inch. Tubes: **2**—18 inch deck. Designed H.P. 7000 = 22 kts. Coal: 95 tons + 60 tons oil. Carries about 200 mines.

GLOMMEN, LAUGEN. 1921 *Photo, by courtesy of the Ministry of Defence.*

GLOMMEN (1917), **LAUGEN** (1917). Both built at Akers Yard, Oslo. 335 tons. Complement, 39. Dimensions: 137·8 × 27·9 × 6·2 feet. Guns: **2**—12 pdr. Designed H.P. 170 = 9·5 kts. Coal: 21 tons. Each carries about 120 mines.

Minelayer and Training Ship.

"No. 119"



Laid down 1931. Displacement: 1,596 tons. Complement, 132. Dimensions: 319 (*o.a.*) × 36 × 10·7 feet. Guns: **4**—4·7″, **1**—12 pdr. AA. Tubes: **2**—18″, paired on deck. Machinery: Geared turbine with Diesel engines and electric drive for cruising purposes. Designed H.P. 6,000 = 20 kts. during 6 hours' trial. Coal: 200 tons and Diesel oil.

Fishery Protection Gunboat.

1931 *Photo, Lt. Comm. Steen Steensen.*

FRIDTJOF NANSEN (Horten, 1931). Displacement: 1,300 tons. Complement, 70. Dimensions: 239·3 × 34·7 × 16·7 feet. Guns: **2**—4″, **2**—3 pdr. AA. I.H.P. 2,000=15 kts. Coal: 150 tons × 95 tons oil.

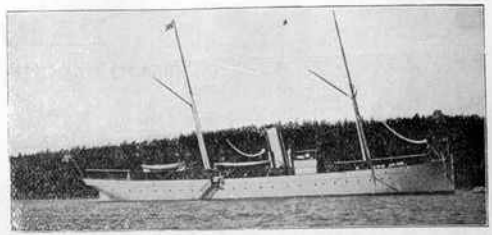
Old Gunboats.

VALE (as Minelayer) on right. 1918 *Photo, S. Anderson, Esq.*

Name.	*Date.*	*Tons.*	*Crew.*	*Guns.*	*Speed kts.*
Tyr	1888	281	44	**1**—4·7 in., **1**—12, + **2**—1 pdr.	10·5
Gor	1885	276	44	**1**—4·7 in., **1**—12, + **2**—1 pdr.	10·5
Vidar ...	1881	254	41	**1**—4.7 in., **1**—3, + **2**—1 pdr.	9·5
Brage ...	1876				8·5
Nor	1878	254	38		8·5
Vale	1878	233	41	**1**—4·7 in. **3**—1 pdr.	8
Uller ...	1874				

(All fitted as Minelayers).

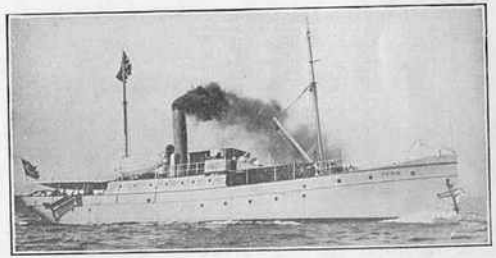
Fishery Protection Vessel.



Photo, Wilse, Oslo.

HEIMDAL (1892). 640 tons. Complement, 62. Length, 181 feet. Draught, 13 feet. Guns: **4**—12 pdr. H.P. 625 = 12 kts. Coal: 92 tons.

Transport (*Transportskib.*)



1918 *Photo, Wilse, Oslo.*

FARM (1900). 300 tons. Complement, 32. Guns: **2**—9 pdr., **2**—1 pdr. Speed: 10 kts.

Submarine Depot Vessel.

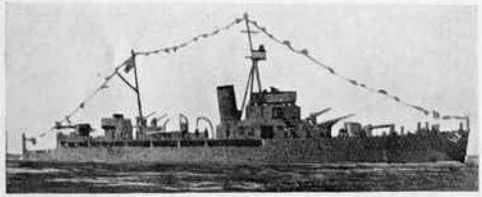
SARPEN (1860). (Rebuilt, 1918). 187 tons. Guns: **2**—9 pdr., **1**—1 pdr. Speed: 9 kts.

PARAGUAY.

(Officially revised 1932 by the Ministry of Defence).

Ensign & Mercantile

Capitán de Navio. Capitán de Fragata. Capitán de Corbeta. Teniente 1°. Teniente 2° Guardia Marina.



HUMAITA. 1932 *Photo, Official.*

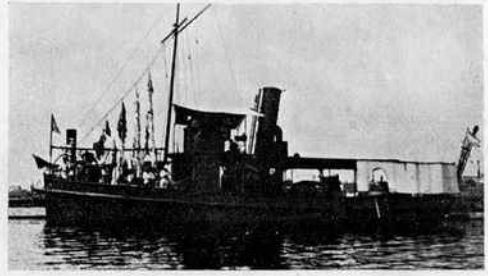
HUMAITA, PARAGUAY (both 1930). Built by Odero, Genoa. Displacement: 745 tons (865 tons full load). Dimensions: 230 × 35 × 5½ feet *draught*. Guns: 2—4·7″, 3—3″ AA., 2 pom pom (40 mm.). H.T. Armour: ½″ side amidships, ½″ deck, ¾″ C.T. Parsons turbines and oil-fired boilers. H.P. 3,000 = 18·5 kts. Oil = 240 tons. Radius, 1,700 miles at 16 kts. Complement, 86. Completed 1930.

TACUARI. 1932 *Photo, Official.*

TACUARI (T. & J. Hosking, 1910). 150 tons. Complement: 54. Dimensions: 129·2 (*p.p.*) × 24·8 × 6 feet. Guns: 2—76 mm. Vickers, 2—76 mm. Armstrong, 2—37 mm. Vickers. H.P. 300 = 10 kts. Wood.

1932 *Photo, Official.*

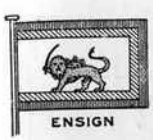
CAPITAN CABRAL (Werf-Conrad, Netherland, 1907). 180 tons. Complement, 47. Dimensions: 98·4 (*p.p.*) × 23·5 × 6 feet. Guns: 1—76 mm. Vickers, 2—37 mm. Vickers. H.P. 300 = 12·5 kts. Wood.

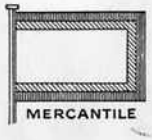


1932 *Photo, Official.*

CORONEL MARTINEZ (Werf-Conrad, Haarlem, 1908). 80 tons. Complement, 32. Dimensions: 65·6 × 18 × 5 feet. Guns: 1—76 mm. Armstrong, 2—37 mm. M. H.P. 100 = 9 kts. Wood.

PERSIA.





6 Motor Gunboats.

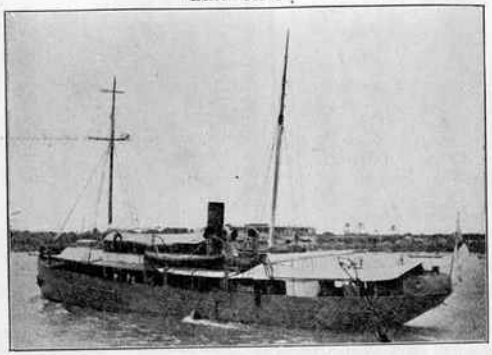
1931 *Photo.*

CHAROKH (July 26, 1931), **SIMORGH** (August 3. 1931), **KARKAS** (August 3, 1931), **CHAH-HAAZ** (August 3, 1931). Laid down 1930 at Cant. Nav. Riuniti (Palermo and Ancona) and Cant. Partenopei (Naples). Displacement: 331 tons. Dimensions: 170 (*p.p.*) × 22 × 5·75 (*mean*) feet. Guns: **2**—76 mm. and **2** pom poms AA. Machinery: **2**—450 B.H.P. Fiat diesels = 15·5 kts.

1932 *Photo, favour of the "Motorship."*

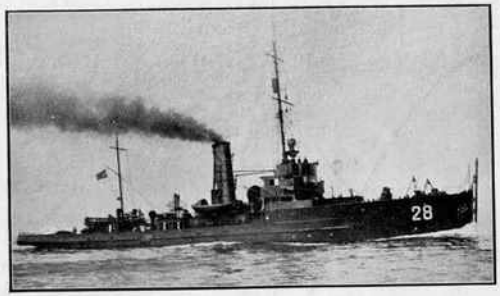
BABR (Aug '31), **PALANG** (Nov. '31). Built by Cantieri Navali Riuniti, Palermo, 1930-31. Displacement: 950 tons. Dimensions: 204·7 (*p.p.*) × 29.5 × 9.8 feet. Guns: **3**—4″ Machinery: 2 Diesels of 950 H.P. = 1900 H.P. = 15 kts.

Gunboats.



1921 *Photo, R. G. Strugnell, Esq.*

MOZAFFER (Nantes, 1899). Dimensions: 135 (*o.a.*) × 26 × 13 feet. 379 tons. No other details known. Served with and in H.M. Navy during the War. Re-conditioned by H.M. Dockyard, Bombay, before return to Persian Navy.



PAHLAVI. This vessel is believed to be an ex-Minesweeper of German F.M. type, built 1917, and purchased 1923, for £4000. Displacement: (*normal*) 135 tons. Dimensions: 132½ (*w.l.*) × 19⅔ × 4 feet *normal* draught. Guns: 1—3 pdr. Machinery: 2 sets triple expansion. Oil fuel: 35 tons. I.H.P. 800 = 16 kts. (after alterations). Complement, 14.

Note.—There was formerly a gunboat on the Caspian, which was captured by Soviet Forces in May, 1920, and is believed to have been retroceded to Persia.

Gunboats—*continued.*

Photo, Lieut. Frewen, R.N.

PERSEPOLIS (1885). Dimensions: 207 × 32¾ × 19½ feet. 1200 tons. H.P. 450 = 10 kts. Guns: **4** old 2.7 inch, 2 machine. Still in service, 1921.

PERU.

Officially Revised by courtesy of the Director del Material, Ministry of Marine, Lima, 1933.

PERU ENSIGN

Mercantile flag the same but without centre device.

Rear-Admirals' flag similar to ensign but has a sun in place of arms in centre.

PERUVIAN CAPTAIN

Colour of Ships: Grey.

Minister of Marine and Air: Capitán de Navio don Carlos V Rotalde.
Naval Commissioner (London): Capt. de Nav. don Manuel D. Faura.

Uniforms.

(Device within circle is a radiant sun.)

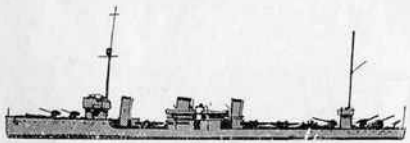
As Contra-Almirante but with 2 thin stripes

Vice-Almirante. *Vice-Admiral.*	Contra-Almirante. *Rear-Admiral.*	Capitan de Navio. *Captain.*	Capitan de Fragata. *Commander. Senior.*	Capitan de Corbeta. *Commander. Junior.*	Teniente 1°. *Lieut. Comm'r.*	Teniente 2°. *Lieut.*	Alferez de Fragata *Sub. Lieutenant.*

All branches have the same insignia: Engineers are distinguished from doctors who wear respectively, instead of the Rising Sun, a propeller and a caduceus.

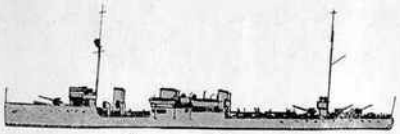
C. Bolognesi.

A. Grau.



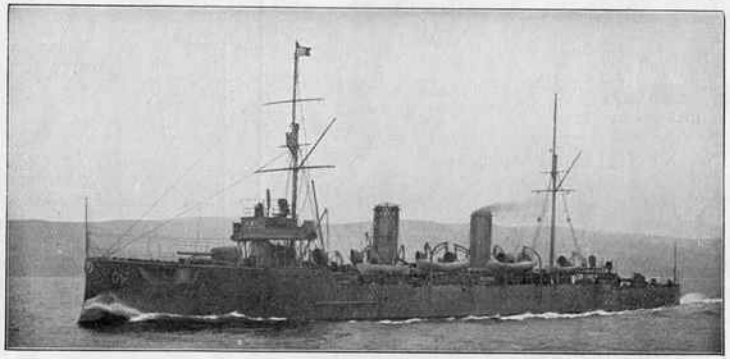
Almirante Guisse.

T. Rodriguez t.b.d.



Almirante Villar.

Cruisers.



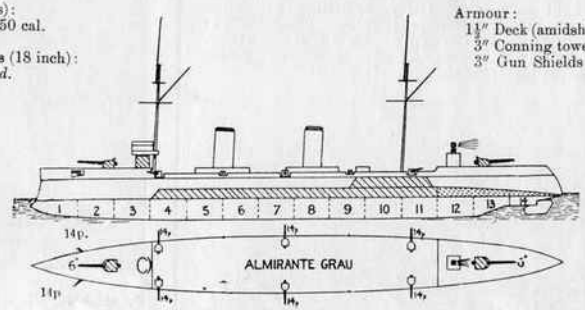
Coronel Bolognesi. The *A. Grau* is identical *except* that she has a poop.

ALMIRANTE GRAU (March, 1906) & CORONEL BOLOGNESI (Nov., 1906).

Displacement: 3,200 tons. Complement, 315.
Length (*p.p.*), 370 feet. Beam, 40½ feet. *Maximum* draught, 14¼ feet.

Guns (Vickers):
2—6 inch, 50 cal.
8—14 pdr.
Torpedo tubes (18 inch):
2 *submerged*.

Armour:
1½" Deck (amidships) =
3" Conning tower ..
3" Gun Shields ...



Ahead: 1—6 in.
Astern: 1—6 in.

Broadside: 2—6 in.

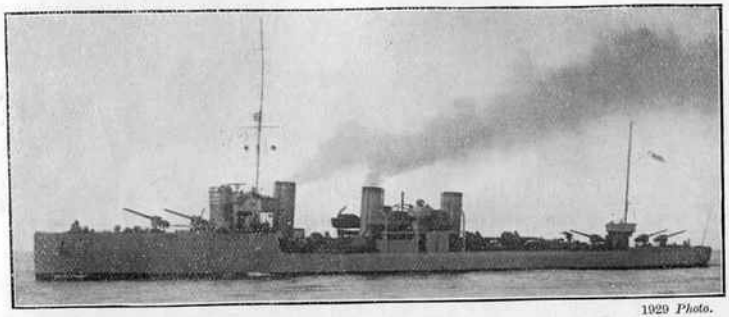
Machinery: 4 cylinder vertical triple expansion. 2 screws. Boilers: 10 Yarrow (converted to oil burning). Designed H.P. 14,000 = 24 kts. Oil: *normal*, 500 tons; Endurance: 3,700 miles at 10 kts.

General Notes.—Built and engined by Messrs. Vickers, Ltd., about 1905-7. Refitted at Balboa, boilers being re-tubed and modified for oil burning, 1923-25. Both ships are now good for 23·5 kts. at sea. *Grau* is at present employed as fleet flagship.

Gunnery Notes.—Italian Giradelli type training indicators are believed to have been added to gunnery equipment.

2 Destroyers.

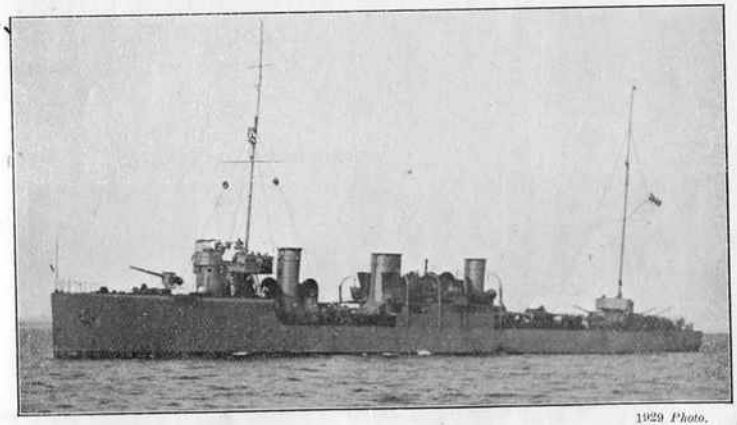
(Both captured by British Cruisers and Destroyers in the Baltic, in Dec., 1918, and transferred to Estonia, from whom they were purchased in 1933).



1929 *Photo.*

Almirante Guisse (ex *Lennuk*, ex-Russian *Avtroil*). Launched at Tallinn by Reval Shipbuilding Co., 1915, completed 1917. Displacement: 1785 tons. Dimensions: 344½ × 31½ × 11'8 feet. Guns: **5**—4 inch, 60 cal., **1**—9 pdr., **2**—47 m/m. **2** M.G. Torpedo tubes: **9**—18 inch, in 3 triple deck mountings. Designed to carry and lay 80 mines. Designed S.H.P. 32,000 = 30 kts. A.E.G. Curtis turbines. Oil fuel: 450 tons = 2400 miles at 15 kts. Complement, 125.

Note.—This vessel was built to the design of Chantiers et Ateliers Augustin Normand, Le Havre.



1929 *Photo.*

Almirante Villar (ex-*Vambola*, ex-Russian *Spartak*, ex-*Mikluha Maklai*). Launched by Putilov Works, Petrograd, 1915, and completed 1918. Displacement: 1,550 tons. Dimensions: 315.7 × 30½ × 12'15 feet. Guns: **4**—4 inch, 60 cal., **1**—2 pdr. Pom-pom, **2** M.G. Torpedo tubes: **9**—18 inch, in 3 triple deck mountings. Designed to carry and lay 80 mines. Designed S.H.P. 32,000 = 30 kts. A.E.G. Curtis turbines. Oil fuel: 420 tons = 2500 miles at 15 kts. Complement, 115.

Destroyer.

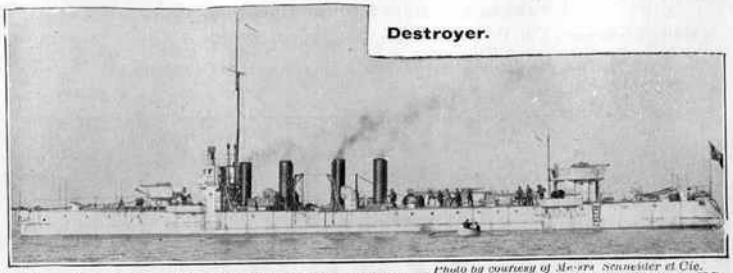
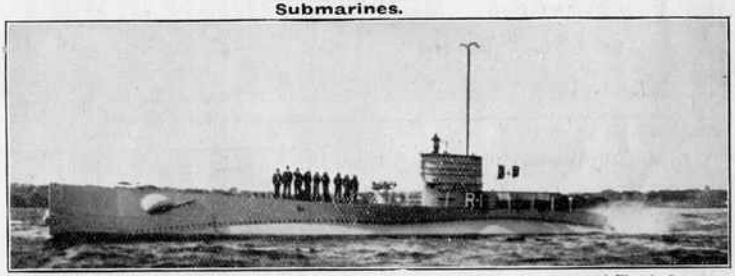


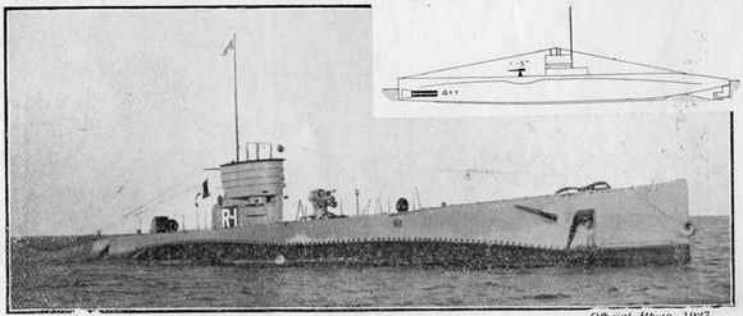
Photo by courtesy of Messrs Schneider et Cie.

1 *Schneider-Creusot*:—***Teniente Rodriguez*** (1909, ex-*Actée*). 490 tons. Dimensions: 212×21·3×14¼ feet. H.P. 8,600 = 28 kts (present best speed 25 kts.). Schneider-Zoelly turbines, du Temple boilers (retubed 1922). Coal: 100 tons = 1200 miles at 10 kts. Armament: **6**—3 pdr., **2**—18 inch tubes. Complement 60. This vessel is regularly employed in the Training of Cadets.

Submarines.



R1. 1927 *Photo, by courtesy of Electric Boat Co.*



R 1. *Official Photo, 1927.*

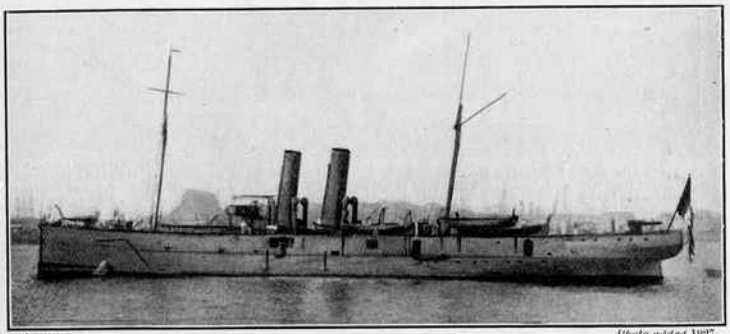
6 *Electric Boat Co.* type: ***R 1*** (April, 1926), ***R 2*** (May, 1926), ***R 3*** (April 21st, 1928), ***R 4*** (May 10th, 1928). Built for contractors (Electric Boat Co.) by New London Ship & Engine Co., of Groton, Conn. *Surface* displacement, 576 tons. *Submerged* displacement, 682 tons (exclusive of non-watertight parts), 755 tons (inclusive of such parts). Length, 200 feet. 2 Nelseco Diesel engines, together 880 H.P. = 14.5 kts. Electric motors of 1000 B.H.P. = 9.5 kts. Radius of action: 8000 miles. Guns: **1**—3 inch. Tubes: **4**—21 inch. (bow). Complement, 30.

Note.—*R* 1, *R* 2, on delivery, completed an unescorted trip from New London to Callao, without mishap, arriving in good order. *R* 3, *R* 4 delivered in summer of 1928; *R* 5, *R* 6 are projected, having been authorised in 1926.

Submarine Depot Ship. (Classed as Cruiser.)

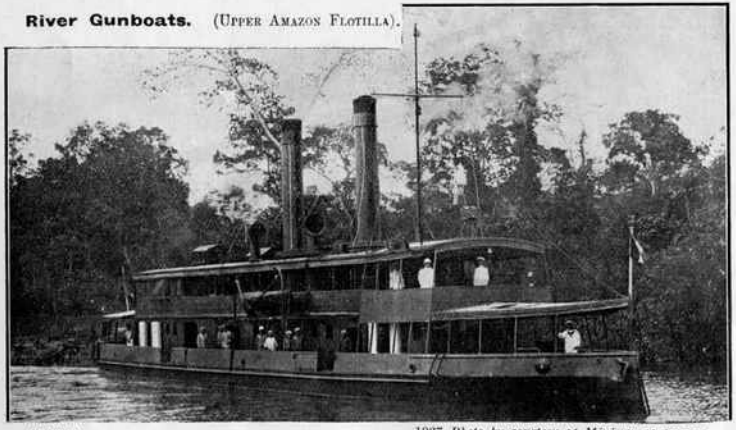
LIMA (Ex-*Socrates*, Kiel, 1880). 1790 tons. H.P. 2000 = 14 kts. Coal: 300 tons. Guns: **3**—4 inch, **4**—3 pdr. Complement, 150.

Note.—This Ship was completely refitted 1927-8 and can now make her designed speed. Radius is 3,000 miles at 10 kts.



LIMA. *Photo added 1927.*

River Gunboats. (UPPER AMAZON FLOTILLA).



AMERICA. 1927 *Photo by courtesy of Ministry of Marine.*

AMERICA (1904). Steel. 240 tons. Dimensions: 133 × 19½ × 4½ feet. Guns: **4**—3 pdr., 2 M.G. I.H.P 350 = 14 kts. Coal: 42 tons. Complement, .

NAPO (1925). Steel. 57 tons. Dimensions: 100 × 18 × 5 feet. Guns: **3**—3 pdr Speed: 12 kts.

IQUITOS (1875). Rebuilt 1896. 50 tons. Dimensions: 77 × 12 × 7½ feet. Guns: **1**—3 pdr., 2 M.G. Speed: 7·5 kts.

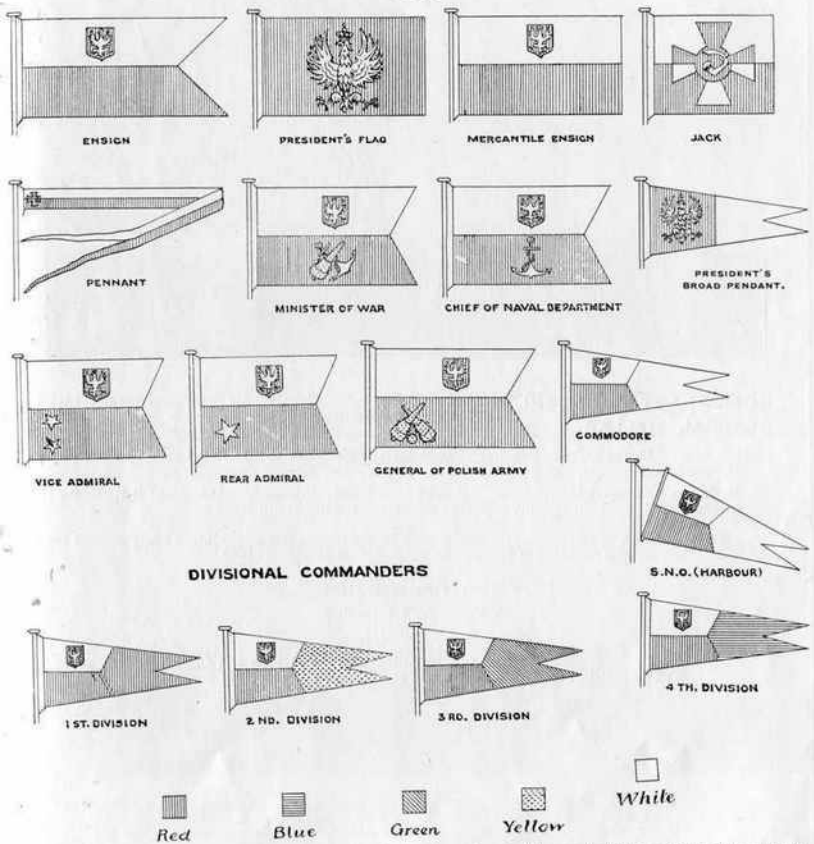
Oiler.

PARIÑAS (ex-*Sjomand*). Built 1921.
Displacement: 2,820 tons.
Dimensions: 300·8 × 43·7 × 24·5 (*max.*) feet.
Speed = 10 kts. Oil = 560 tons. Tanks: 4,300 tons.

POLAND.

Revised 1933 by the Chief of the Naval Department.

Flags.



Note.—The Emblem in the centre of the Jack is a flesh-coloured arm holding a steel-blue scimitar with gold hilt. The covering over shoulder of the arm is pale blue and has a gold-tasselled fringe.

Minister of War.—Marshal Pilsudski.

Chief of the Naval Department.—Rear-Admiral G. Swirski.

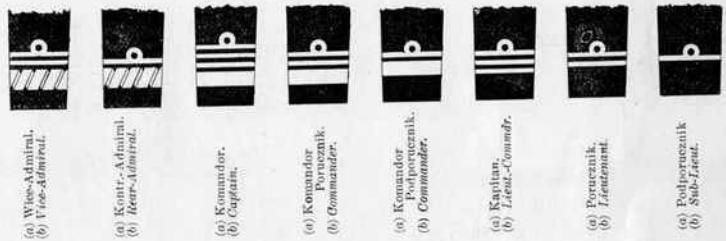
Military and Naval Attaché (London).—

Personnel.—250 officers, 2500 men; total, 2750.

Colour of Warships.—Pearl grey; of *Naval River Craft*, grey-green.

Uniforms.

(a) = Polish Rank. (b) = Equivalent British Rank.



Arsenals, Shipbuilders, &c.

Naval base and dockyard is under development at Gdynia.

Naval College is temporary established at Torun.

Mercantile Marine.

There are the following Polish Companies:—

Gdynia-America Line with a regular service to New York and Halifax.

Polish-British Company with a regular service to London and Hull.

Zegluga Polska Polish Navigation with a regular service to Tallin, Helsingfors, Rotterdam, Wiborg and Antwerpen with a mixed cargo; regular passenger service on the Polish and Danzing coasts and a considerable number of cargo ships of a different tonnage; Robur, concern of the Upper Silesian mines, to whom belong a fleet of coalers.

There are many foreign regular services bound to Gdynia.

Mercantile Marine (Lloyd's Register 1933). 32 Vessels 67,063 gross Tonnage.

RECOGNITION SILHOUETTES.

WARSZAWA.
HORODYSZCZE.
TORUN.
PINSK.

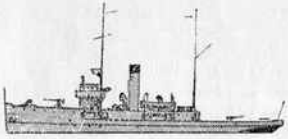
WILNO KRAKOW.

KRAKOWIAK
SLĄZAK
PODHALANIN
} t.b.

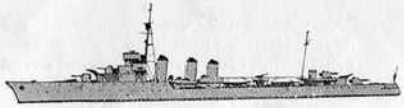
MEWA

KUJAWIAK t.b.

MAZUR.

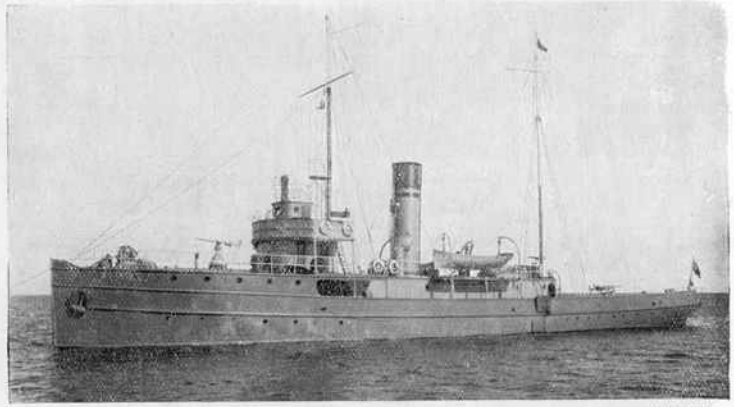


KOMENDANT PILSUDSKI
GENERAL HALLER
} Gunboats.



BURZA.
WICHER.
} Destroyers.

Gunboats (*Lodzie Kanonierskie*).



1922 *Photo.*

KOMENDANT PILSUDSKI } (Crichton, Abö, Finland, 1918-19.) { Completed Jan., 1921
GENERAL HALLER } { „ 1920.

Displacement: 342 tons. Complement, 60. Length, (*p.p.*) 154·2 feet, (*o.a.*) 164½ feet. Beam, 22¾ feet. Designed load draught, 7 ft. 7 in. Guns: 2—12 pdr., 2—3 pdr.

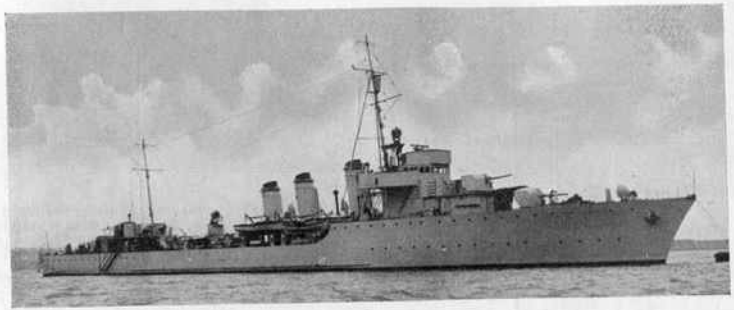
Machinery: 2 sets triple expansion. 2 screws. Boilers: Normand. Designed I.H.P., 1000=15 kts. at 120 r.p.m. Coal capacity: 50 tons *normal*=700 miles at full speed.

Notes.—Belong to a Class of four vessels originally ordered for the Russian Navy. The above two purchased from Finland; the remaining two added to Finnish Navy as *Karjala* and *Turunmaa* (*q.v.*).

New Construction.

A programme including
4 destroyers
4 submarines.
1 mine-layer of 2,000 tons is under consideration.
For political reasons all contracts are likely to be placed in France.

2 Destroyers.



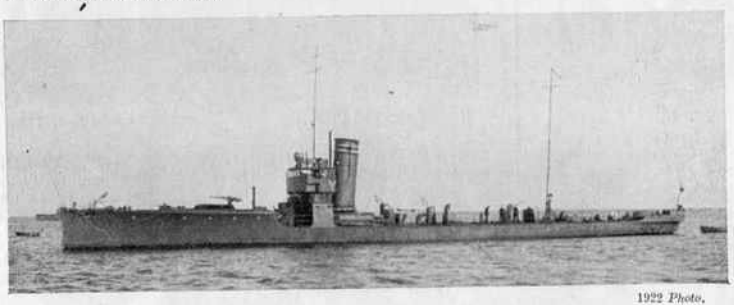
WICHER. 1930 *Photo, by favour of M. Le Masson.*

Burza (April 16th, 1929), ***Wicher*** (July 10th, 1928). Both laid down by Chantiers Navals Français, Blainville, Nov. 1st, 1926, and Feb. 19th, 1927, respectively. Displacement: 1540 tons. Dimensions: 344 (*w.l.*), 351 (*o.a.*) × 29 × 9¼ feet, draught. Guns: **4**—5.1 inch, **2**—1.5 inch AA. Torpedo tubes: **6**—20.8 inch, in triple deck mountings. Machinery: Geared turbines (supplied by At. & Ch. de la Loire). H.P. 35,000 = 33 kts.

Notes.—Design of these vessels follows closely that of French *Simoun* class. Meanings of names are: *Burza*, Squall; *Wicher*, Hurricane. Completed 1930.

5 Torpedo Boats (*Torpedowce*).

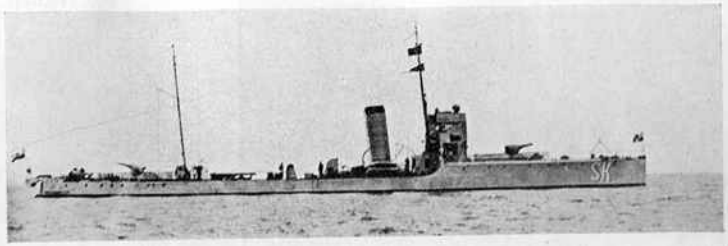
Transferred to Poland, Nov. 4th, 1920.



1922 *Photo.*

1 "*A III*" *type*: ***Kujawiak*** (ex-German *A 68*). Built by Schichau, Elbing, during 1917. Displacement: 335 tons *normal*, 355 tons *max.* load. Dimensions: 196·9 (*o.a.*) × 21 × 7·4 feet. Guns: **2**—12 pdr., **2** M.G. Tubes: **1**—17.7 inch. H.P. 5800 = 27·1 kts. *on trials*. Fuel: 76 tons (*on trials*) 82 tons *max.* capacity = 725 miles at 20 kts. Complement, 69.

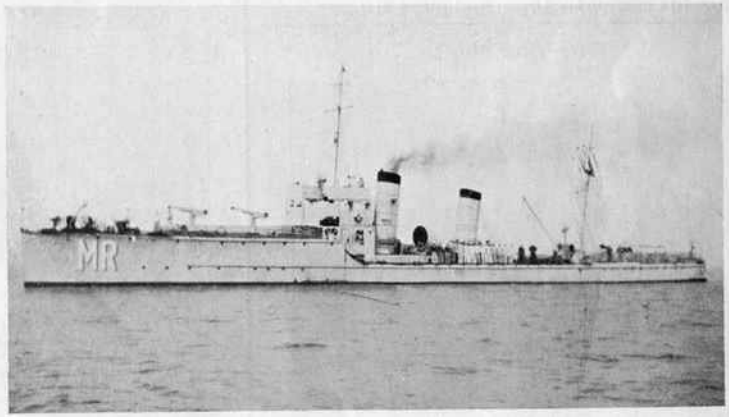
Notes.—*A 68* re-fitted by H.M. Dockyard, Rosyth, 1921. *A 69* was in so bad a state as to be not worth re-fitting; ex-German *V 105* (ceded to Brazil, but not required by that country) was taken over in place of *A 69*.



SLAZAK. 1932 *Photo, Official.*

3 "*A III*" *type*: ***Krakowiak*** (ex-German *A 64*), ***Podhalanin*** (ex-*A 80*), ***Slazak*** (ex-German *A 59*). Built by Vulkan, Stettin, 1916-17. Displacement: 365 tons *normal*, 380 tons *max. load*. Dimensions: 196·8 (*o.a.*) × 21 × 6 feet. Guns: **2**—12 pdr., **2** M.G. Tubes: **1**—17·7 inch. H.P. *about* 6050 = 28·38 kts. *on trials*. Fuel: 85 tons (*on trials*), 61·67 tons *max.* capacity. Complement, 69.

Notes.—*A 64* re-fitted 1921, by H.M. Dockyard, Rosyth.



MAZUR. (re-constructed) 1932 *Photo, Official.*

1 *ex-German* boat: ***Mazur*** (ex-German *V 105*). Built by Vulkan, Hamburg, 1914-15. Displacement: 342 tons *normal*, 421.2 tons *max.* load. Dimensions: 205.6 (*o.a.*) × 20.4 × 7.4 feet. Guns: **2**—12 pdr., **2** M.G. Tubes: **2**—17.7 inch. H.P. 6000 = 30 kts., *on trials* 5500 = 28 kts. Fuel: 59.7 tons coal + 16.2 tons oil = 640 miles at 20 kts. Complement, 74.

Notes.—Original four boats of this class begun for Netherlands Navy as *Z 1*—*Z 4*; taken over by Germany, August, 1914, re-numbered *V 105*—*108*. *V 107* War Loss. *V 106* of this class assigned to Brazil, but sold to England. *Kaszub* (ex-*V 108*) sunk by explosion in July, 1925, and subsequently discarded as not worth repair.

CC

Armed River Steamers.

HETMAN CHODKIEWICZ. 1924 *Official Photo.*

ADMIRAL SIERPINEK, GENERAL SOSNKOWSKI, GENERAL SIKORSKI, HETMAN CHODKIEWICZ, ADMIRAL DICKMAN, GENERAL SZEPTYCKI. 100-200 tons. 8-9 kts. Guns: **2**—14 pdrs., and **4** M.G. "Armour plated." Complement, 38.

River Motor Boats.

30 boats. 7-13 tons. 10 kts. Guns: **1**—1 pdr., **2** M.G.

Surveying Ship

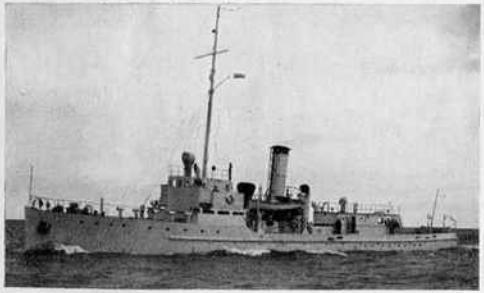


Photo 1933, *Official.*

MEWA (Seagull), Built 1917. *Normal* Displacement: 170·98 tons (203 tons *full load*). Dimensions: (*p.p.*) 131¼, (*w.l.*) 132¼, (*o.a.*) 140¾ × 19¾ × 4 feet *normal* draught, 5 feet "medium load" draught. Guns: **1**—3 pdr., **2** M.G. Machinery: 2 sets triple expansion I.H.P. 700 = 13 kts. speed. Coal: 20 tons *normal*; 34·6 tons *full load*. Oil: 4 tons. Complement, 44.

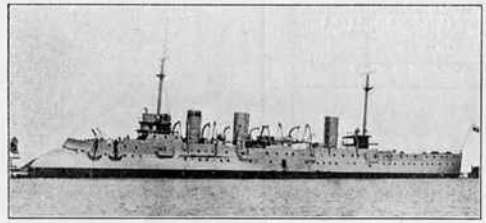
Notes.—Ex-German "F. M. Boot," *i.e.*, flat-bottomed Mine "searchers." Altered to Survey Ship, 1932. Purchased by Poland, 1921.

Transport (*Transportowce*).

WILJA. 1932 *Photo, Official.*

WILJA. Displacement: 8400 tons. Dimensions: 342¼ × 46 × 19½ feet. Speed: 10 kts. Complement, 53.

Training Hulk.

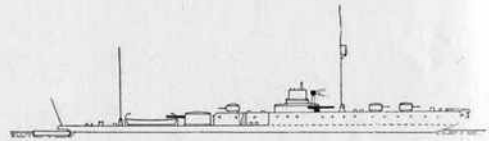


BALTYK 1929 *Photo.*

BALTYK (La Seyne, 1898). Displacement: 8000 tons. Dimensions: 393½ × 58½ × 23½ feet. Guns: 4—3·6" Saluting battery. Depot and Hulk at Gdynia.

Notes.—This vessel is ex-French Cruiser *d'Entrecasteaux*, which, having been presented to Belgium for use as a Training Ship, was retroceded to France on the suppression of the Belgian Navy, and acquired by Poland, in July, 1927.

River Monitors (*Monitory*).



WILNO (1925), **KRAKOW** (1925), and 2 others (not yet named), building by Zieleniewski, Cracow, for completion in 1928. Displacement: 70 tons. Dimensions: 115 × 20 × 1.25 feet *normal* draught. Guns: **1**—4.1 inch, **2**—12 pdr., **3** M.G. Armour: Not reported. Machinery: 2 sets oil motors, each 70 H.P. = 9 kts. Complement, 35.

HORODYSZCZE and PINSK. *Official Photo* 1922.

WARSZAWA (1920), **HORODYSZCZE** (1920), **TORUŃ** (1920), **PINSK** (1920). "Armoured Monitors" built by Gdansk Shipyard, 1920, for service on the Vistula. Displacement: 110 tons *normal*, 135 *deep load*. Dimensions: 113·2 (*o.a.*) × 16·56 × 2·3 feet *normal* draught, 2·6 feet *deep load*. Guns: **2**—4·1 inch, **5** M.G. Armour: ½" side amidships, ½" turrets, —" C.T. Machinery: 3 sets 60 B.H.P. Daimler motors totalling 180 B.H.P. = 9·1 kts. Petroleum fuel, 5 tons *normal*, 10 tons *max.* capacity = 1500 miles at 8 kts. Complement, 34.

3 Submarines (*Minelayers*).

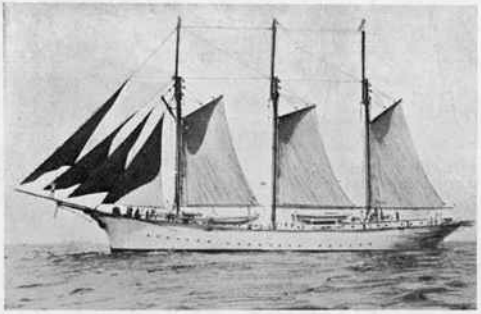
WILK. 1930 *Photo, by courtesy of Messrs. Augustin Normand.*

3 *Normand-Fenaux* type: ***Rys*** (At. & Ch. de la Loire, Nantes), April 22, 1929, ***Zbik*** (Ch. Navals Français, Blainville), ***Wilk*** (Ch. & At. Augustin Normand, Le Havre, April 12, 1929). Displacement: $\frac{980}{1250}$ tons. Dimensions: 246 × 16 × 13 feet. Guns: **1**—3.9 inch, **1**—1.5 inch AA. Torpedo tubes: **6**—20.8 inch. Mines carried: **32**. 2 sets Vickers-Normand Diesels, H.P. 1800 = 14 kts. on *surface*. Electric motors, B.H.P. 1200 = 9 kts. *submerged*. Radius of action: 7000 miles on *surface*, 100 miles *submerged*. Diving limit: 44 fathoms.

Carry **10** torpedoes and **40** mines.

Meanings of names are as follows: *Rys*, Lynx; *Wilk*, Wolf; *Zbik*, Wild Cat.

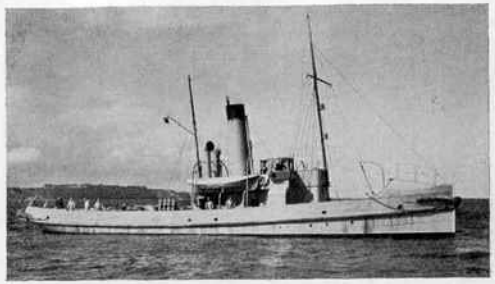
Wilk is prototype of the class, and all were built to Normand plans.



ISKRA. 1932 *Photo, Official.*

ISKRA (1917). Auxiliary 3-masted Schooner, purchased in Netherlands, 1927. Displacement: 560 tons. Dimensions: $127\frac{3}{4} \times 25 \times 9\frac{3}{4}$ feet. H.P. 130 = 7·5 kts. Sea-going Tender to *Naval College*.

Tugs.



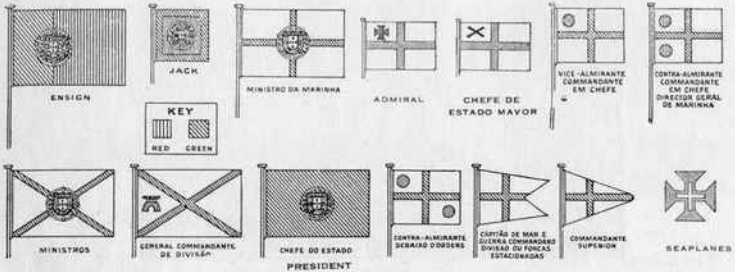
LECH. *Photo* 1933, *Official.*

LECH (1903). Displacement: 280 tons. Dimensions: 96 × 20·8 × 11·3 feet. Designed—I.H.P. 560. Speed: 12 kts.

SMOK (1921). Displacement: 655 tons. Dimensions: 128 × 27·5 × 10·9 feet. Designed—I.H.P. 1,000. Speed: 12·5 kts.

PORTUGAL

Revised 1933, by courtesy of the Minister of Marine.



Naval Uniforms.

British rank	Almirante.*	Vice-almirante.†	Contra-almirante.‡	Capitão de mare guerra.	Capitão de fragata.	Capitão tenente	Primeiro tenente.	Segundo Tenente.	Guarda marinha.
	Admiral.	*Vice-Admiral.*	*Rear-Admiral.*	*Captain.*	*Commander. (Senior.)*	*Commander. (Junior.)*	*Lieut.-Commander and Lieut.*	*Lieut. & Sub-Lieut.*	*Act. Sub.-Lt. & Midshipman*

* Admiral has four *gold* stars. † Vice-Admiral has three *gold* stars. ‡ Rear-Admiral has three *silver* stars.

Staff officers same but *without* executive curl. Colour between stripes—*Surgeons*: red; *Engineers*: violet; *Paymasters*: blue; *Constructors*: black. On visor of cap, *Admirals*: 2 oak leaves; *Captains*: 1 oak leaf; *Commanders*: 1 narrow stripe. Uniforms like British Navy. Chin strap of gold cord, but officers of lieutenant's rank and below have black chin straps.

Minister of Marine:

Chief of the Naval Mission: Capt.

Personnel: 689 officers and 5670 men. *Colour of Ships*: Dark grey.

Mercantile Marine: (From "Lloyd's Register," 1933 figures.) 177 vessels, *gross* tonnage, 242,876.

Mode of address: N.R.P. "———". (Navio da Republica Portuguesa).

NAVAL PROGRAMME

By the law 18,633 (17 July, 1930) must be built in ten years:

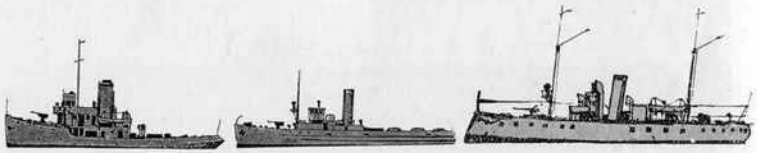
2 Light cruisers (Cruzadores ligeiros).
4 1st class Sloops (Avisos de 1ª classe).
8 2nd class Sloops (Avisos de 2ª classe).
12 Destroyers (Contra-torpedeiros).
8 submarines (submersiveis).
4 Gunboats (Canhoneiras).
1 Aircraft Tender (Transporte de aviões).
1 Submarines Depot-Ship (Navio apoio de submarinos).

The first part (in execution) is composed of:

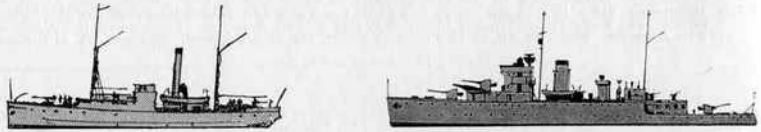
2 1st class Sloops building in England (Consortium Vickers). (R. & W. Hawthorn Leslie & Co.). Contracts in Italy (Odero-Terni-Orlando) having been cancelled.
2 2nd class Sloops built in England (R. & W. Hawthorn Leslie & Co.).
5 Destroyers: 2 built in England (Yarrows), and 3 building at Lisbon (Sociedade de Construcções e Reparações, Ltd.ª)
3 Submarines building in England (Vickers). Contracts in Italy (Cantieri Reuniti dell'Adriatico) for building 2 having been cancelled.

The aircraft tender (contract placed with Cant. R. dell'Adriatico and cancelled) is not included in this part of the programme, one destroyer and one submarine having been substituted. (Originally there were four destroyers and two submarines.)

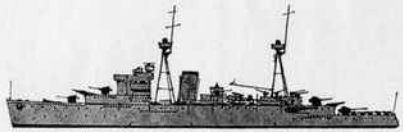
The 2nd class sloop *Pedro Nunes*, building in Lisbon Arsenal is not included in the Naval Programme, she was already building.



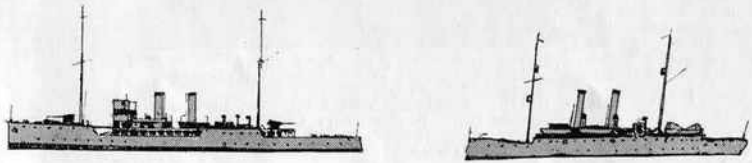
FARO. LAGOS. RAUL CASCAIS. BEIRA *class* (8).



LIMPOPO. GONÇALVES ZARCO. GONÇALO VELHO.



AFONSO DE ALBUQUERGUE. BARTOLOMEU DIAS. PEDRO NUNES.

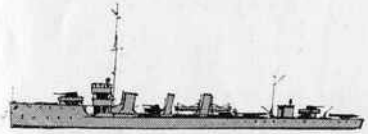


REPUBLICA. C. ARAUJO. CINCO DE OUTUBRO.

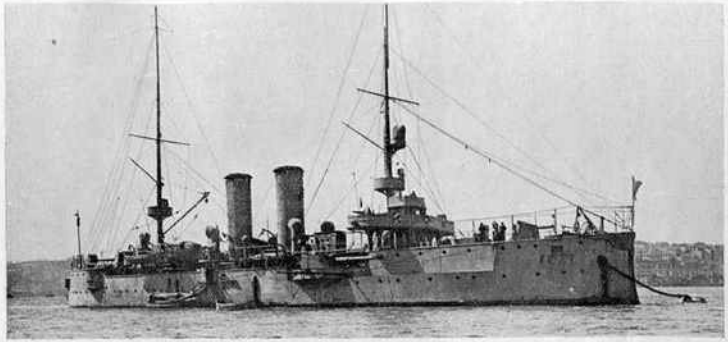
VASCO DA GAMA.

AVE *class.*

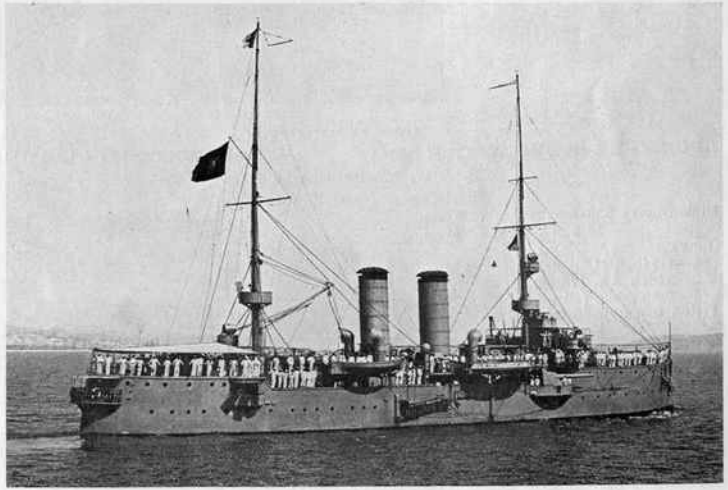
VOUGA *class.*



TAMEGA. GUADIANA.



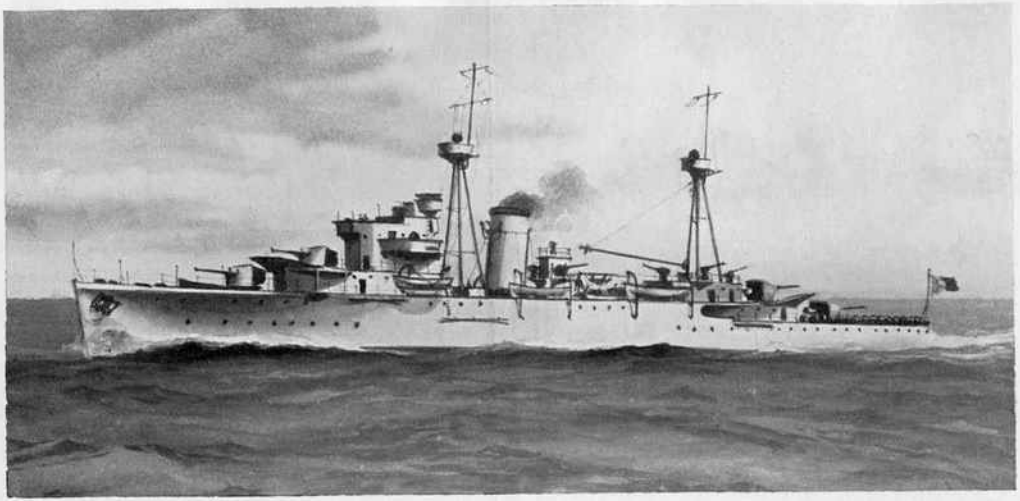
1919 *Photo.*



1933 *Photo, Mr. Henrique Seixas.*

VASCO DA GAMA (Blackwall, 1876, reconstructed and lengthened by Orlando, 1902). 2982 tons. Comp., 259. Dimensions: 232·9×40¼×18½ feet. Guns (re-armed 1922) **1**—8 inch (40), **1**—6 inch (45), **1**—4 inch (40), **6**—14 pdr. No torpedo tubes. Armour (iron): 9″—7″ Belt, 7¾″ (Terni) Barbettes. Machinery: 2 sets triple expansion. 2 screws. Designed H.P. (new): 6000=15·5 kts. Boilers: 5 Cylindrical. Coal: 420 tons. Complement: 264.
Note.—Doubtful if this ship can do 12 kts. now.

SLOOPS.
1st class.



AFONSO DE ALBUQUERQUE.

1933 *Drawing, Oscar Parkes.*

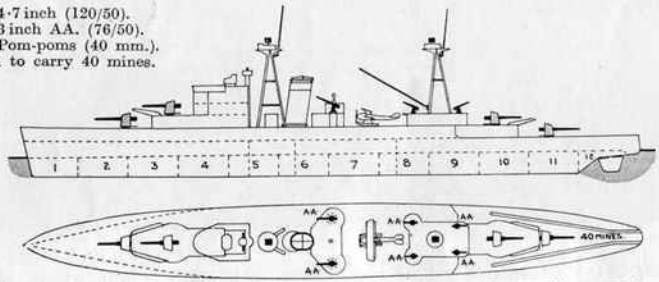
AFONSO DE ALBUQUERQUE (bldg.) **BARTOLOMEU DIAS** (bldg.)

R. & W. Hawthorn Leslie & Co.

Displacement (*normal*): 2,100 tons.

Dimensions: 326·4 × 44·2 × 22·9 feet.
99·6 × 13·5 × 7 meters.

Guns:
4—4·7 inch (120/50).
2—3 inch AA. (76/50).
4—Pom-poms (40 mm.).
Fitted to carry 40 mines.



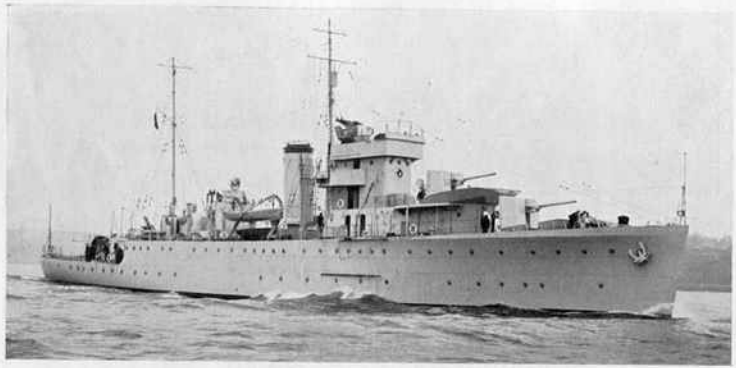
Machinery: Geared turbines. S.H.P.: 8000 = 21 kts. Radius: 8000 miles at 10 kts. 4 Yarrow boilers.

Notes.—Original contract placed with Odero-Terni-Orlando, 1931, cancelled 1932, and design modified by new builders when fresh contract was made.

GONÇALO VELHO (See next page.)

1933 *Photo.*

2nd Class



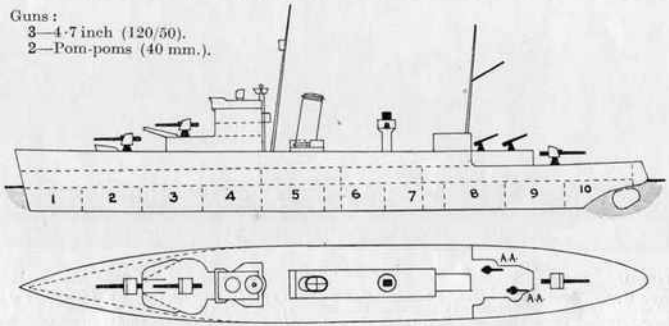
GONÇALO VELHO. 1933 *Photo, Courtesy of builders.*

GONÇALVES ZARCO (1932), **GONÇALO VELHO** (Aug., 1932).

R. & W. Hawthorn Leslie & Co.
Displacement (*normal*): 1174 tons (metric).
Complement 140.

Dimensions: 267·9 (*o.a.*) × 34·7 × 16·7 feet.
81·7 × 10·67 × 5·18 meters.

Guns:
3—4·7 inch (120/50).
2—Pom-poms (40 mm.).



Machinery: Geared turbines. S.H.P.: 2000 = 16·5 kts. 2 screws. Boilers: 2 Yarrow.
Radius: 9831 miles at 11 kts. Oil: 335 tons.
Trials: 4 hrs. full speed = 17·4 kts.

2nd Class

(*Building*)

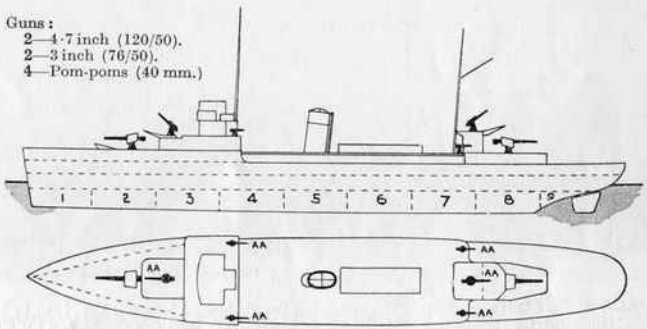
PEDRO NUNES (Building)

Lisbon Arsenal

Displacement (*normal*): 1017 tons (metric).

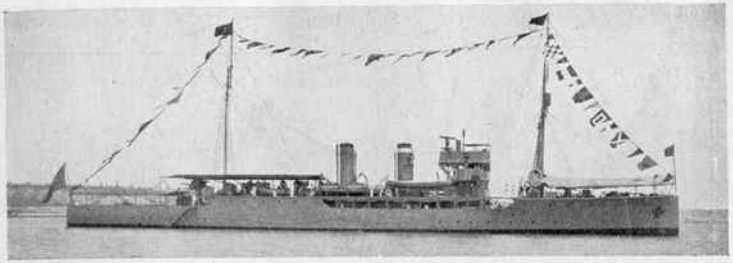
Dimensions: 231·5 (*o.a.*) × 32·8 × 16·4 feet.
70·5 × 10 × 5 meters.

Guns:
2—4·7 inch (120/50).
2—3 inch (76/50).
4—Pom-poms (40 mm.)



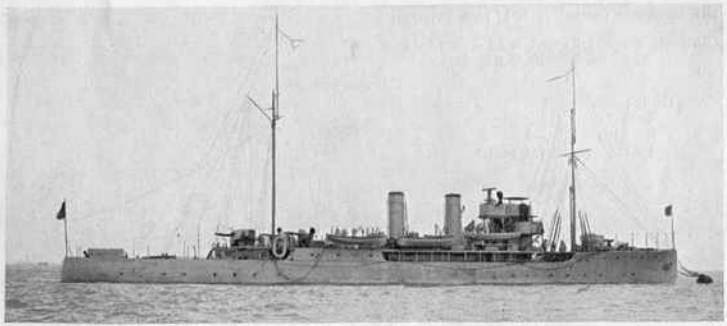
Machinery: 2 Diesel motors. B.H.P.: 2400 = 16 kts. Radius: 8000 miles at 10·5 kts.
Oil: tons.

Sloops. 2nd class.



REPUBLICA. 1933 *Photo, Eng.-Lt. Aluino Martins. P.N.*

REPUBLICA (ex-British Fleet-sweeping Vessel, *Gladiolus*, launched Oct., 1915, by Messrs. Chas. Connell & Co., Scotstoun.) 1250 tons. Dimensions: 255½ (*p.p.*), 267¾ (*o.a.*) × 33½ × 11 (*mean*), 11¾ feet (*max.* draught). Guns: **2**—4 inch (Vickers), **2**—3 inch AA. (Elswick), **4**—9 pdr. (Hotchkiss), **4**—3 pdr. (Hotchkiss). I.H.P. 2362 = 16·4 kts. Machinery: 1 set 3-cyl. triple exp. Boilers: 2 cylindrical. 1 screw. Coal: 375 tons; = about 5000 miles at 15 kts. Complement **137.** Built under British Emergency War Programme as a unit of the *Azalea* group of "Flower Class" Sloops. Sold to Portugal 1920. Refitted 1928–30 for Colonial Service.



1933 *Photo, Eng.-Lt. Aluino Martins. P.N.*

CARVALHO ARAUJO (ex-British Fleet-sweeping Vessel, *Jonquil*, launched May, 1915, by Messrs. Chas. Connell & Co., Scotstoun.) 1200 tons. Dimensions: 250 (*p.p.*), 262½ (*o.a.*) × 33 × 11 (*mean*), 11¾ feet (*max.* draught). Guns: as *Republica* above and also 2 Thornycroft type depth charge throwers. I.H.P. 2242 = 17·25 kts. Speed machinery, boilers, &c., as *Republica*. Built under British Emergency War Programme as a unit of the *Acacia* group of "Flower Class" Sloops. Sold to Portugal 1920. Refitted 1928–30 for Colonial Service and interchanges as flagship in Portuguese West and East Africa with *Republica*.

7 Destroyers.

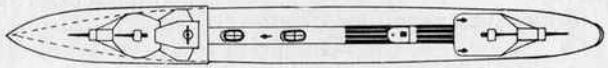
VOUGA. 1933 *Photo, Messrs. Yarrow.*

DÃO (Bldg.). *DOURO* (Bldg.). **TÉJO.** Soc. de Const., Lisbon.
VOUGA. LIMA. Yarrows.

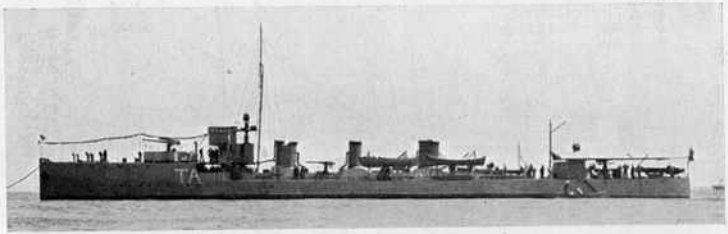
Displacement: (*normal*) 1,383 tons.
Dimensions: 323 × 31·1 × 11 feet.
98·15 × 9·5 × 3·4 meters.

Guns:
- 4—4·7 inch (120/50)
- 3—Pom-poms (40 m/m)
- 2—D.C. Throwers

Tubes:
- 8—21 inch (530 m/m) in two quadruple mountings.



Machinery: Geared Parsons turbines. S.H.P. 33,000 = 36 kts. 3 Yarrow boilers (400 lbs. pressure).
Oil: 296 tons. Radius: 5,400 miles at 15 kts.
Vouga and *Lima* completed 1933. *Téjo* in Feb. 1934. *Douro* in June 1934 and *Dão* in Dec. 1934.

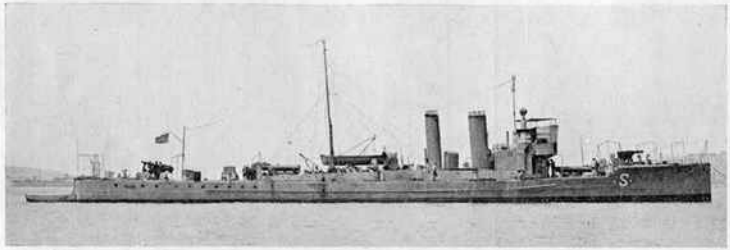


TAMEGA. 1933 *Photo, Eng.-Lt. Aluino Martins. P.N.*

2 *Yarrow* type. ***Tamega*** (Jan. 1922) by Lisbon D.Y., ***Guadiana*** (1914). Built by Yarrow and assembled at Lisbon. 660 tons. Dimensions: 240 × 23½ × 7½ feet, *max.* draught. Armament: **1**–4 inch, **2**–3 inch. **2** pairs of 18 inch Torpedo tubes. Parsons turbines; H.P. 11,000—27 kts., 3 Yarrow boilers. Compl:—80. Coal: 146 tons = 800 miles at 15 kts.

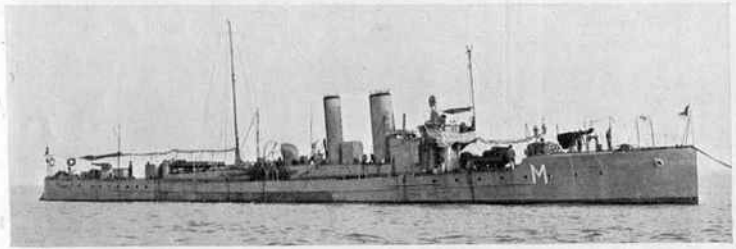
(Note.—Now has twin TT mountings.)

4 Torpedo Boats.



SADO. 1933 *Photo, Eng.-Lt. Alvino Martins. P.N.*

(Has higher bridge than rest of class.)

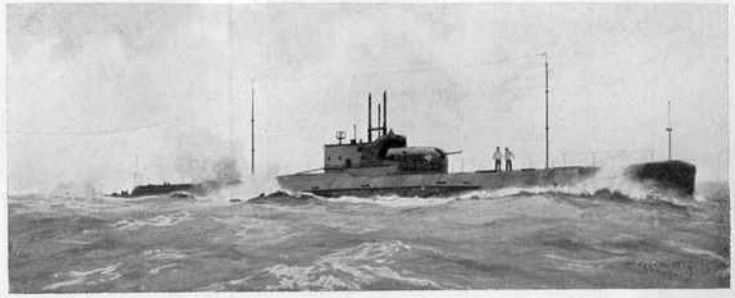


MONDEGO. 1933 *Photo, Eng.-Lt. Alvino Martins. P.N.*

4 Ex-Austrian boats: ***Ave, Sado, Lis, Mondego*** (Ganz-Danubius Co., Porto Ré, Fiume, 1913-15). Displacement: 250 tons. Dimensions: 188·3×19×8 feet *max.* draught. Guns: 1—66 m/30 Skoda, 1—57 mm. Hotckiss. Tubes: 4—18" in pairs. Designed S.H.P. 5,000=28 kts. (made 31 kts. when new). Turbine engines and 2 Yarrow boilers. Fuel: 20 tons coal×34 tons oil. Complement, 45.

These boats form a Training Flotilla for Stokers' and Torpedo courses.

6 Submarines. (*Submersaveis*)



1933 *Drawing, Oscar Parkes.*

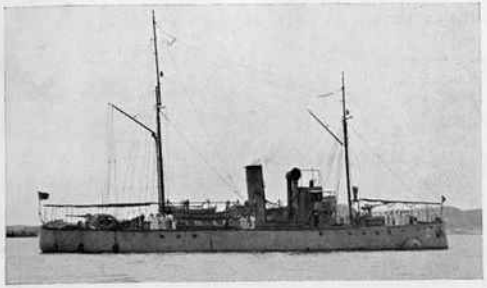
3 boats: Vickers-Armstrong. A,B,C.
854/1,105 tons. Dimensions: 227·2×21·3×12·7 feet.
Armament: 1—4"/40, 2 M.G. Tubes: 6—21" (4 bow, 2 stern). 12 torpedoes carried.
Machinery: Vickers diesels 2×1,650 H.P.=16·5 kts. Motors H.P. 1,000=9·25 kts. Radius: 2,080 miles full speed, 5,000 miles at 10 kts; *submerged*=8 miles at full speed and 110 miles at 4 kts.
Complement, 38.
Names originally *Delfin, Espadarte*, and "*X*," may be changed to *Albacore, Balcote*, and *Cachalote*.

1919 *Photo.*

3 *Laurenti-Fiat* type: ***Foca, Golfinho*** and ***Hidra*** (Spezia, 1916–1917). Displ.: 260/389 tons. Dims.: 147¾×13·8×10½ feet. Armament: 2—18 inch bow torpedo tubes. 4 torpedoes. Machinery: 2 sets of 275 B.H.P. 6-cylinder Fiat-Diesel engines *on surface*; electric motors+batteries *submerged*. Maximum speeds: 14·2 kts. *on surface* and 8½ kts. *submerged*. Radius of action: about 650 miles at full speed, and 3,500 miles at 8½ kts. *on surface*: about 18 miles at 8½ kts. and 100 at 4 kts. *submerged*. Complement: 21.

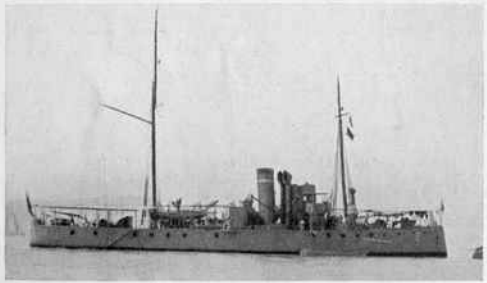
Note.—These boats will be discarded on delivery of those under construction.

Gunboats (*Canhoneiras*).



ZAIRE. 1933 *Photo, Eng.-Lt. Aluino Martins, P.N.*

DAMÃO (1926), **DIU** (Oct., 1929), **ZAIRE** (ex-*Goa*, 26th Feb., 1925), built at Lisbon D.Y. 500 tons. Details as *Beira* class below, with minor improvements.



BEIRA. 1933 *Photo, Mr. Henrique Seixas.*

BENGO (1917), **MANDOVI** (1917), **QUANZA** (1918), **BEIRA** (1910) and **IBO** (1911). All built at Lisbon D.Y. 405 tons. Dimensions: $147\frac{3}{8} \times 27\frac{1}{4} \times 6\cdot8$ feet. H.P. 700 = 13 kts. Coal: 85 tons. Radius: 3200 miles at 9 kts. Boilers: Cylindrical. 2 screws. Complement, 68.

	Identification letters	*Guns*
Beira	B A	2 Hotckiss 65 mm/46—2 Hotckiss 47 mm/40.
Bengo	B O	,, ,,
Damão	D	2 Armstrong 76 mm/40—2 Hot. 47 mm/40—1 M.G.
Diu	none	2 Armstrong 76mm/40—2 Hot. 47 mm/40—1 M.G.
Ibo	I	2 (American) 76 mm/50—2 Hot.
Mandovi	M I	3 Hotckiss 57 mm/40—2 Hot.
Quanza	Q	2 Armstrong 76mm/40—2 Hot.
Zaire	Z	,, ,,

Gunboats—(*continued*)

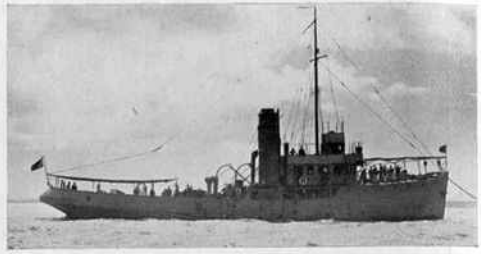
LIMPOPO 1932 *Photo.*

LIMPOPO (Poplar, 1890). 288 tons. $124 \times 21 \times 6\frac{1}{2}$ feet. Guns: **3**—6 pdr., **1** machine. H.P. 523 = 11·3 kts. Complement, 54.

RAUL CASCAIS 1933 *Photo, Eng.-Lt. Aluina Martins, P.N.*

RAUL CASCAIS (ex-*F.N.* 19, ex-*Toning*).
(J. C. Teckelenberg A.G., 1918). 253 tons.
Guns: **1** Hotckiss 47 mm., **1** M.G.
Machinery: 2 sets 3 cyl. Triple exp. 600 H.P. = 13 kts. 2 screws.
Boilers: 1 Yarrow. Coal: 40 tons = radius 500 miles.
Complement, 40.

Gunboats—(*continued*)



LAGOS. 1933 *Photo, Mr. Henrique Seixas.*

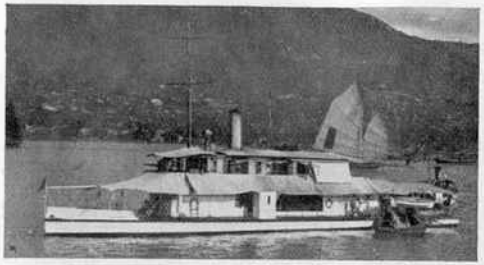
FARO, LAGOS. Built at Lisbon D.Y. Displacement: 384 tons. Dimensions: 131·2 × 19·6 × 10·5 feet. Guns: **2**—47 mm. H.P. 650 = 13 kts. 1 Yarrow boiler. 1 Screw. Radius 2,000 miles at 7·5 kts. Oil = 44 tons. Complement, 53.

LIDADOR. 1932, *Eng.-Lt. Aluina Martins, P.N.*

LIDADOR (1884). 252 tons.
Guns: **2** Hotckiss 47 mm.
Machinery: 2 sets 2 cyl. Comp. (Lairds). H.P. 400 = 11 kts. 2 Screws. 1 cyl. Boiler.
Coal: 40 tons = 1,528 miles at 7 kts.
Complement, 40.

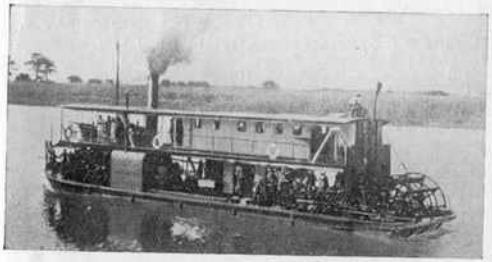
Classed as a Tug, she is employed on Fisheries Protection duties.

River Gunboats.



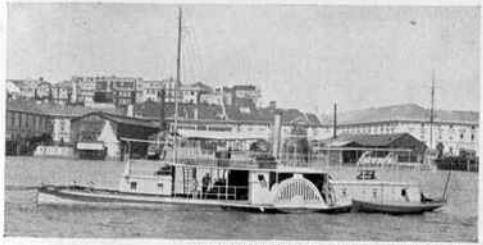
1933 *Photo, Mr. Henrique Seixas.*

MACAU (Yarrow, 1909). 133 tons. 119¾ × 19·8 × 2 feet. Guns: 2—6 pdr., 3 machine. H.P. 250 = 11·8 kts. Boilers: Yarrow. Complement, 24.



1933 *Photo, Mr. Henrique Seixas.*

TETE (1904). 70 tons. Guns: 1—37 mm., 2 M.G. H.P. 64 = 7·5 kts. Employed on Zambesi River.



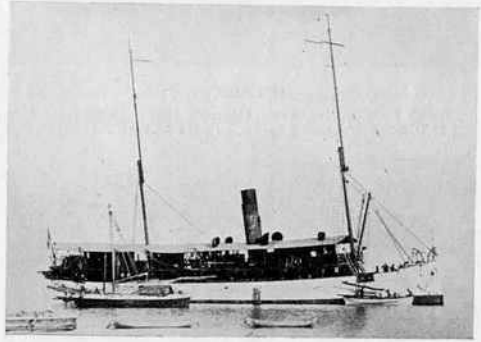
1933 *Photo, Eng.-Lt. Aluino Martins, P.N.*

RIO MINHO (Lisbon D.Y., 1904). 38 tons. Paddlewheel. 80·7 × 13·1 × 1·9 feet. H.P. 64 = 7½ kts. Guns: 2—1 pdr. Complement, 68, are nominally borne on her books, the majority of these ranks and ratings being actually at various shore stations on the Portuguese bank of the river Minho, for fisheries, customs duties, &c.

Patrol Boats.

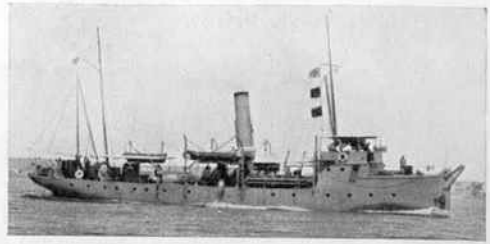
1933 *Photo, Eng.-Lt. Aluino Martins, P.N.*

LINCE (Italy, 1911). 78 tons. 2 sets semi-diesels. B.H.P. 300 = 12 kts. 2 screws. Complement, 20. Attached to Torpedo Training School.



DILY. 500 tons. 140 (*p.p*) × 25 × 10·3 feet. H.P. 500 = 11 kts. 1 screw. Complement, 72. Employed in Timor.

Mining Vessels.



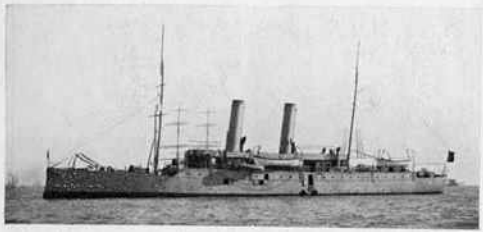
1933 *Photo, Mr. Henrique Seixas.*

VULCANO (1910). Built by Thornycroft. 151 tons. 110 × 19½ × 4½ feet. 2 dropping gears forward. H.P. 500 = 13 kts. 2 screws. Yarrow boiler. Complement, 38. Employed in Divers and Torpedo instruction, and carries Torpedo Tubes for this purpose.

1933 *Photo, Mr. Henrique Seixas.*

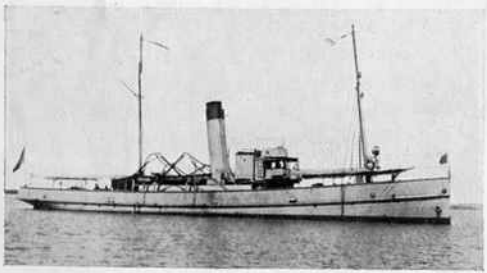
Has no distinctive name or number: is referred to as "Mineiro" *i.e.*, Mining Vessel. (Built 1892). 78 metric tons. 58·5 × 13·4 × 7 feet. I.H.P. 150 = 8 kts. 2 screws.

Survey Vessels.



1933, *Eng.-Lt. Aluino Martins, P.N.*

CINCO DE OUTUBRO (ex-*Amelia*, ex-*Banshee*; Ramage & Ferguson, Leith, 1900). 1,365 tons. 226·9×28·9×14 feet. Guns: 2—1 pdr. H.P. 1,800=15 kts. 2 screws. Cylindrical boilers. Coal: 230 tons. Complement, 99.

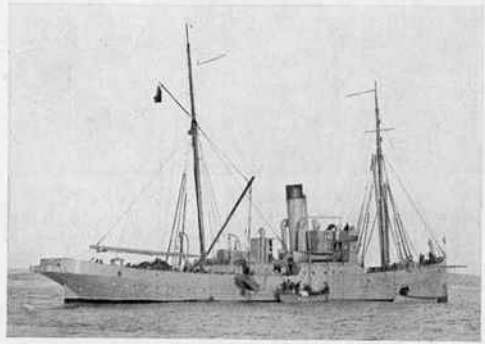


1933 *Photo, Mr. Henrique Seixas.*

BERRIO (S.A. At. et Ch. Loire, 1897). 496 tons.
Guns: nil. Trip. Exp. engines. H.P. 1,070=10 kts.
Coal: 103 tons. Complement, 52.
Employed on Portuguese E. African Coast.

ALBACORA (Lindstol & Son, Norway, 1924).
Topsail schooner.
135 tons. 1 set semi-diesels. H.P. 60=5 kts.
Oil fuel: 4·6 tons=1,650 miles. Complement, 15.

Salvage Vessel.



1933 *Photo, Eng.-Lt. Aluino Martins, P.N.*

PATRÃO LOPES (ex-*Newa*, Rostock, 1880). Iron. 1,100 tons.
I.H.P. 378=10 kts. 1 screw. Coal: 95 tons. Complement, 64.

Transport.

1933 *Photo, Eng.-Lt. Aluino Martins, P.N.*

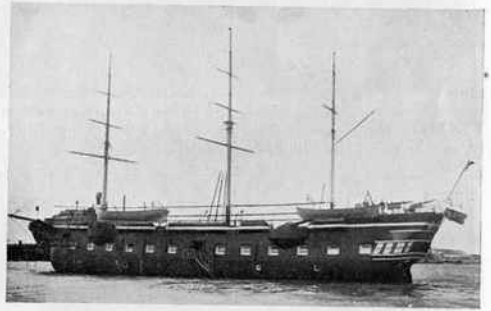
GIL EANES (1914). 1,712 tons. 278×41×16·8 feet. H.P. 2,000=11 kts. 1 screw. Cylindrical boilers. Employed as Hospital Ship on Fishery Service.

Training Ship.

1933 *Photo, Eng.-Lt. Aluino Martins, P.N.*

SAGRES (ex-*Flores*, ex-*Max*, 1896). 3,500 tons.
Guns: 4—57 mm. 2 sets Diesels B.H.P. 700=8 kts.
2 screws. Complement, 181.
Captured German Sailing Ship, transformed into Naval Training Ship, 1924. Motors fitted, 1928.

Gunnery Training Ship.



1933 *Photo, Mr. Henrique Seixas.*

D. FERNANDO IIe GLORIA (Goa, 1843). Wood.
Displacement: 1,849 tons.
Guns: 2 Armstrong 101 mm., 2 Schneider 100 mm.,
3 Armstrong 76 mm., 1 Hotckiss 57 mm.,
5 Hotckiss 47 mm., 3 M.G.
Complement, 123.
Frequently serves as S.N.O. ship on the Tagus.

ROUMANIA.

Officially revised 1933.

FLAGS

THE KING

ENSIGN

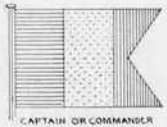
* COMMANDER OF NAVY

MINISTER OF WAR

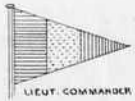
JACK

VICE ADMIRAL

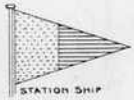
REAR ADMIRAL



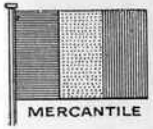
CAPTAIN OR COMMANDER



LIEUT. COMMANDER

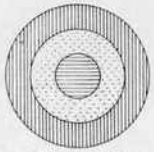


STATION SHIP



MERCANTILE

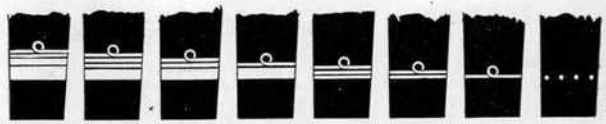
Red
White
Blue
Yellow



AEROPLANES

* When the C. in C. is a Vice-Admiral his flag will carry two stars and crossed anchors.

Uniforms.



* Vice-Amiral. (*British Vice-Admiral.*)	Comandor. (*British Captain.*)	Capitan-Comandor. (*British Commander.*)	Locotenent-Comandor. (*British Lt.-Com.*)	Capitan. (*British Senr.-Lieut.*)	Locotenent. (*British Lieutenant.*)	Sub-locotenent. (*Sub-Lieut.*)	Elev din Scoala de Marina. (*Midshipman.*)

* In addition to above, there is rank of Contr' Amiral (*British, Rear-Admiral*) as Vice-Amiral but without lower thin stripe.

Stripes are gold (except Paymasters, who wear silver) with curl for all branches. Colour of silk between, above and below stripes :—Executive, black; Engineers, violet; Surgeons, dark red, almost purple in colour: Constructors, light blue; Apothecaries, green; Musical Director, light grey.

ADMINISTRATION

Inspector General of the Navy: Vice-Admiral H.R.H. Prince Nicholas of Roumania.

Director of Navy:

Commander in Chief:

Naval Attaché, London: Commander Gheorghe Niculescu.

Mercantile Marine: 36 vessels of 93,348 gross tonnage.

Colour of Ships: Light grey.

Personnel: officers, men.

SUMMARY OF NAVAL FORCES

4 Destroyers.
3 Torpedo Boats.
1 Submarine (delivery not yet accepted).
4 Gunboats.
7 Monitors.
3 Patrol Vessels.
1 Submarine Depot Ship.
A number of Danube patrol and police boats.

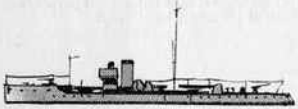
Silhouettes

LT. LEPRI REMUS *class* (4).

ARDEAL.

CONSTANTA.

I. C. BRATIANU *class* (4).



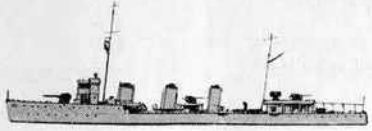
SBORVL.

BASARABIA.

NALUCA. SMEUL.

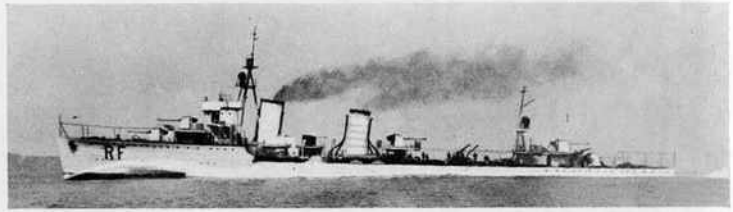
BUCOVINA.

REGELE FERDINAND I.
REGINA MARIA.

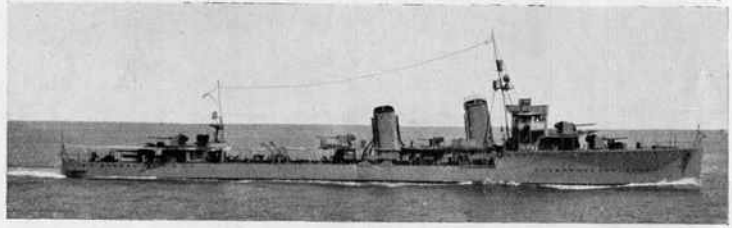


MARASTI. MARASESTI.

(1) **Black Sea Division.** (*Divizia de Mare*). **4 Destroyers.** (*Distrugătoáre.*)



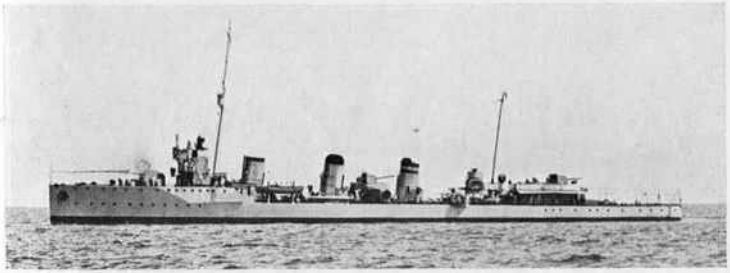
REGELE FERDINAND I. 1932 *Photo.*



REGINA MARIA. 1930, *Dr. Mendl.*

2 *Thornycroft type:* ***Regele Ferdinand I*** (Dec. 2nd, 1928), ***Regina Maria*** (March 2nd, 1929). Laid down at Pattison Yard, Naples, in June, 1927, to design of Messrs. Thornycroft. Displacement 1900 tons. Dimensions: 334¼ × 31½ × 11¼ feet. Parsons geared turbines by Stabilimento Tecnico Triestino. H.P. 48 000 = 34 kts. Radius: 5000 miles at 15 kts. Armament: **5**—4·7 inch. 50 cal., Bofors, **1**—3 inch. AA,. Bofors, **2**—2 pdr. pom-pom. **6**—21 inch torpedo tubes (tripled), 50 mines. Firing Director of Siemens type. Cost per ship, without armament £295,000. Completed 1930.

Destroyers.—*continued.*



1932 *Photo, Dr. Mendl.*

2 *Pattison type*: ***Mărăşti*** (ex-Italian *Sparviero*, 1919), and ***Mărăşeşti*** (ex-Italian *Nibbio*, 1918). 1391 tons *normal* (1723 tons *full load*). Dimensions: 309½ (p.p.) × 31 × 11½ feet. Guns: 5—4·7 inch, 2—14 pdr., 40 cal. AA. 2 M.G. Tubes: 4—17·7 inch in twin deck mountings. Searchlights: 1—36 inch. Designed S.H.P. 45,000 = 34 kts. Trials: *Marasesti*, 48,020 S.H.P. = 38·04 kts., 2 Tosi turbines. 2 screws. 5 Thornycroft oil burning boilers. Oil: 260 tons = 1700 miles (15 kts.), 580 miles (full speed). Complement: 139.

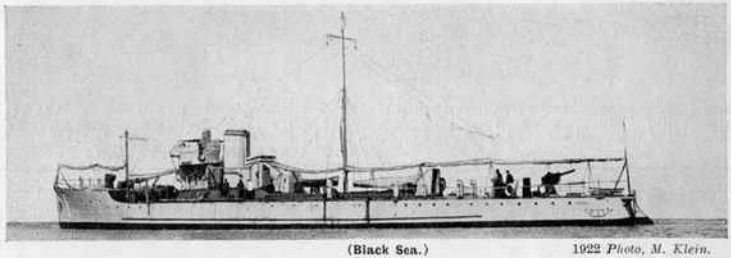
Notes.—Belong to class of 4 Destroyers, *Vifor, Viscol, Vârtej, Vijelia*, ordered for Roumanian Navy about 1915. Were requisitioned for Italian Navy during war and re-named *Aquila, Falco, Nibbio, Sparviero*. Last two re-purchased by Roumania 1920, and renamed after actions fought in 1917. Refitted and rearmed at Galatz and Naples, 1925-26.

3 Torpedo Boats.* *(Torpiloare.)*

No.	Type	Date	Displacement	H.P.	Max. speed	Fuel	Complement	Tubes	Max. draug't
			tons		kts.	tons			feet
1	*Sborul* (ST)	1914	262	5000	24	42	—	2 in some.	5
2	*Năluca* (GD)		266	*t*	...	54		15″ or 17·7″	

(GD) = Ganz-Danubius, Fiume. (*t*) = Turbines. (ST) = Stab. Tecnico Triestino, Trieste.

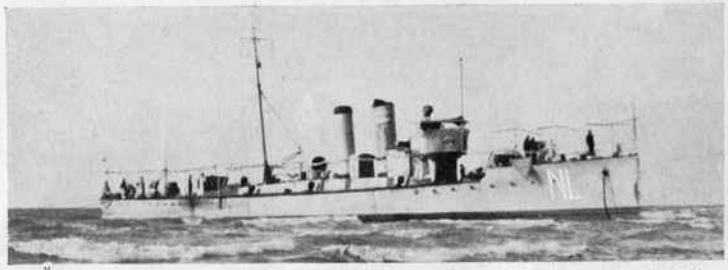
*Ex-Austrian boats taken over at Venice, 1920. Another of these boats (*Fulgerul*) was lost on the voyage from Italy to the Black Sea.



(Black Sea.) 1922 *Photo, M. Klein.*

1 Ex-Austrian boat: ***Sborul*** (ex-*81T*), (Stab. Tecnico Triestino, Trieste, 1913-14). Displacement: 262 tons. Dimensions: 189½ × 19 × 5 feet. Guns: 2—11 pdr.; Torpedo tubes: 4—17.7 inch. Designed S.H.P. 5000 = 28 kts. (24 best speed now). Turbine engines and Yarrow boilers. Fuel: 18 tons coal + 24 tons oil.

Note.—Sborul means Flight.



NĂLUCA. (Black Sea.) 1923 *Photo, Captain A. Tiufiaeff, late I.R.N.*

2 Ex-Austrian boats: ***Năluca*** (ex-*82F*), ***Smeul*** (ex-*83F*), (Ganz-Danubius Co., Porto Ré, Fiume, 1913-14.) 260 tons. Beam, 19 feet. Guns: 2—11 pdr., 2 M.G. No tubes. 1—16·5 inch S.L. Fuel: 20 tons coal + 34 tons oil, other details as *Sborul* above. *Smeul* = Dragon. *Năluca* = Phantom.

Submarine.

Quarnaro boat: ***Delfinul.*** Fiume (1930). Displacement: $\frac{650}{900}$ tons. Dimensions: 225 × 19½ × 12 feet. Speed 14 kts. Armed with **1**—4 inch gun and **8**—21 inch tubes. Completed 1931, but there has been a postponement of the acceptance of this vessel and she has not yet been taken over by Roumania.

(Black Sea) Gunboats. (*Canoniere.*)

1919 *Photo.*

LOCOTENENT LEPRI REMUS (ex-French *Chiffone*, Lorient D.Y. launched 1917).

LOCOTENENT-COMANDOR STIHI EUGEN (ex-French *Friponne*, Lorient D.Y., launched 1916).

SUBLOCOTENENT GHICULESCU (ex-French *Impatiente*, Brest D.Y., launched 1916).

CĂPITAN DUMITRESCU C. (ex-French *Mignonne*, Brest D.Y., launched 1917).

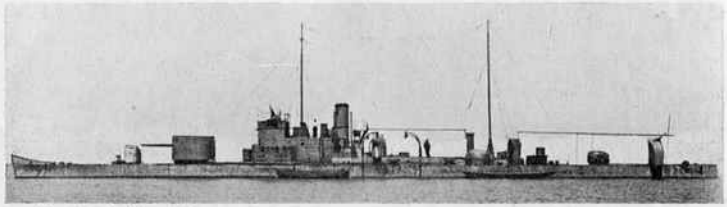
Displacement: 400, 450, 350, 390 tons respectively. Length: 189½ to 199¾ ft. Beam: 22 ft. 7 in. Draught: first pair, 9¼ ft.; second pair, 7¾ ft. Guns: **2**—3·9 inch. **2** M.G. S.L.: 2—15·7 inch. Engines: 2 sets of Sulzer Diesel motors. B.H.P. 900 = 15 kts. Fuel carried: 30 tons oil = 3000 miles (10 kts.), 1600 miles (15 kts.) Complement, 50.

Notes.—Purchased from French Navy, 9th January, 1920. Entered service 15th Jan., 1920. Are differentiated by coloured rings around crowsnest. Names are those of naval officers killed in action, 1916-18.

(2) Danube Division (*Divizia de Dunare*).

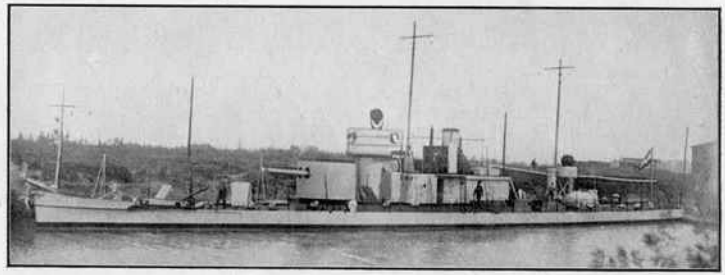
Monitors (*Monitoare*).

Note.—With exception of *Bratianu* class, all are named after Roumanian provinces.



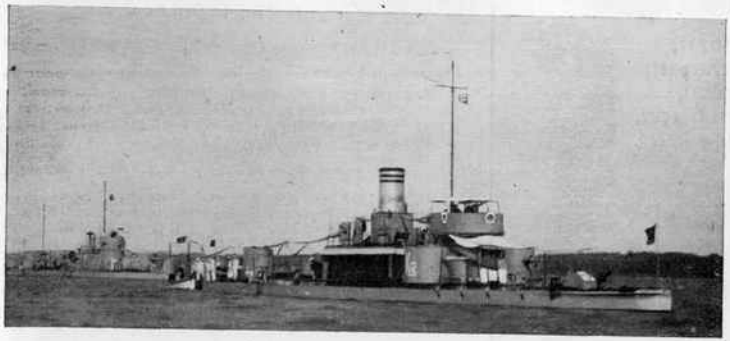
(Has flush deck forward.)

BUCOVINA (ex-Austro-Hungarian *Sava*, launched 1915). Displacement, 550 tons. Dimensions: 190¼ × 33·8 × 4¼ feet. Guns: **2**—4.7 inch, 45 cal. Skoda (paired in single turret forward) + **2**—4.7 inch, 10 cal. howitzers (fortress type, singly mounted in pits with cupola protection), **2**—66 m/m. (AA., twin-mounted in turret), **2**—47 m/m., and **6** M.G. 1—24 inch searchlight. Armour: 1½″ Belt and Bulkheads, 1″ Deck, 2″ C.T., 2″ Turret and Cupolas. 3 magazines with water-jackets and electric-controlled refrigerators. Designed H.P. 1600 = 12 kts. Boilers: Yarrow. Fuel: 75 tons, oil *only*. Complement, 90 to 100. Built under 1914-15 Austro-Hungarian Naval Programme, completed 1915. Interned at Novi Sad 1919-20 and handed over by Yugo-Slavs at Orsova early in 1921. Sister ship, *Vardar*, now unit of Yugo-Slav Danube Flotilla.



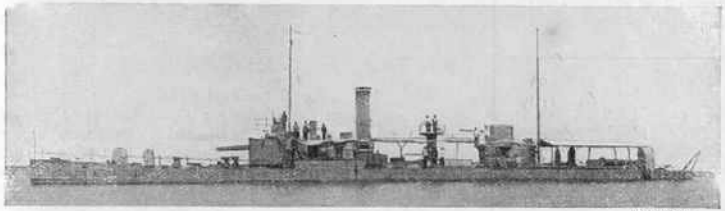
BASARABIA (ex-Austro-Hungarian *Inn*, launched 1915). Displacement, 550 tons. Dimensions: 203½ (*o.a.*) × 34½ × 4¼ feet. Guns: **2**—4.7 inch, 45 cal. + **3**—4.7 inch, 10 cal. howitzers, **2**—47 m/m., **9** M.G. Armour: 1½ Belt and Bulkheads, 1″ Deck, 2″ Turret and Cupolas, 2″ C.T. Designed I.H.P. 1500 = 12 kts. Boilers: Yarrow. Fuel: 70 tons, oil *only*. Complement, 100. Built under Austro-Hungarian 1912 Naval Programme; interned at Novi Sad 1919-20, handed over by Yugo-Slavs at Orsova early in 1921. Sister ship, *Drava*, now unit of Yugo-Slav Danube Flotilla is shown above.

(Danube) **Monitors**—*continued.*



M. KOGALNICEANU. 1931 *Photo, Dr. Mendl.*

ION C. BRĂTIANU (1907), **MIHAIL KOGĂLNICEANU** (1907), **ALEXANDRU LAHOVARI** (1908), and **LASCĂR CATARGIU** (1907). Displacement: 680 tons. Complement, 110. Dimensions: 208½ × 33¾ × 5½ feet. Guns (Skoda): **3**—4.7 inch, 35 cal. (**2**—4.7 inch howitzers removed during the War), **1**—3 inch. AA., **2**—47 m/m., **2** M.G. **1**—30.7 inch search light. Armour: 3″ Belt, 3″ Deck, 3″—2″ Turrets. H.P. 1800 = 13 kts. Coal: 60 tons. Built by Stabilimento Tecnico Triestino, at Trieste, in sections, re-erected at Galatz. Deckcabins and military masts removed during the War. All named after 19th century Roumanian statesmen.

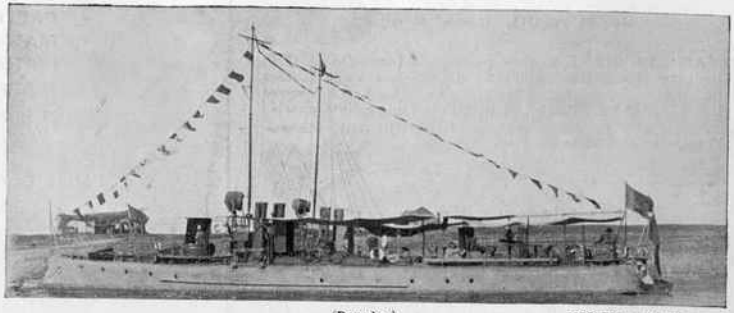


1922 *Photo.*

ARDEAL (ex-Austro-Hungarian *Temes*, 1904). Displacement: 450 tons. Complement, 80 to 90. Dimensions: 183½ × 31½ × 3¾ feet. Guns: **2**—4.7 inch, 35 cal., **1**—3.4 inch AA., **2**—47 m/m., **4** M.G. Armour: 1½″ Belt, 3″ and 1½″ Turrets, 1½″ Bulkheads, 1″ Deck. H.P. 1400 = 10 kts. Fuel capacity: 60 tons. Was originally built as a sister-ship to *Sava*, of Yugo-Slav Navy. While serving on Danube as Austro-Hungarian *Temes*, she was sunk in October, 1914, but was raised in June, 1916, and entirely rebuilt 1916-17; she is thus, compared with others of the same original design, a practically new Monitor. Re-entered service April, 1917. Interned at Novi Sad, 1919-20; handed over at Orsova by Yugo-Slavs early in 1921. Easily identified by her tall, thin funnel and raised gun aft, mounted during reconstruction, 1916-17. No other Monitor exists with this arrangement, except Yugo-Slav *Morava*, and her guns are not in turrets.

(Danube) **Patrol Vessels** (*Vedete*).

Note.—All are named after Army officers who fell in the War of Independence, 1877.



(Danube.) 1922 *Photo, M. Klein.*

3 *Major Sontu* class: **CĂPITAN ROMANO MIHAIL, LOCOTENENT CALNESCU DIMITRIE, MAIOR SONTU GHEORGHE**

(Thames Iron Works, 1906.) Displacement, 50 tons. Dimensions: 100 × 13 × 2¾ feet. Armament: **1**—47 m/m. Skoda, **1** machine. **1**—20 inch S.L. Some have a light steel c.t. with s.l. on top. H.P. 590 to 620 = 17·7 to 18 kts. Oil fuel: 7½ tons. Complement, 20. Differentiated by large coloured numerals on funnels. Their two twin funnels, ram bows and round tunnel sterns make their recognition easy. *Capt. V. Mărăcsneau* mined 1916.

Submarine Depot Ship, (*Nava Bază.*)

Photo 1931, *Dr. Mendl.*

CONSTANTA (November 8, 1928). Laid down at the Quarnara Yard, Fiume, August 15, 1927, completed in 1931. Displacement: 2,300 tons. Dimensions: 255¾ × 37 × 13¼ feet. 2 Diesel motors = 1,000 H.P. = 13 kts. Radius: 12,000 miles. Guns: **2**—4 inch, **2** M.G. 3 electric generating sets H.P. 136. Fitted with engineering and torpedo shops; bakery: torpedo loading room: salvage, diving and submarine signalling apparatus.

(Danube.)

Royal Yacht. (*Iachtul Regal*).

STEFAN CEL MARE (ex-river passenger steamer *Orient*, 1870). Built by Donau-Dampfschiffahrts Gesellschaft Yard, Altofen, Budapest. Dimensions: 250×27·5×4.6 feet. Paddle engines, H.P. 670 = 18 kts. Painted white, with two thin yellow funnels.

Note.—Named after the famous Moldavian Prince (1457–1504), who was victorious over the Turks and Poles.

Miscellaneous Vessels.

MĂCIN (Stab. Tecnico Triestino, Linz, 1912). 200 tons. Dimensions: 138·9×20·3×4·9 feet. 2 sets Diesel engines, B.H.P. 500 = 12 kts. 2 screws. Guns: Nil. Complement, 30.

Note.—This vessel, originally a river tug, has had a deckhouse built forward, and serves as administrative flagship of the Roumanian Danube Flotilla. Painted white, with a yellow funnel.

Măcin is a small town in the Dobrudja.

The Danube flotilla also includes 2 Armed Paddle Steamers, *General Maican* and *Capitan-Comandor Paun*; two others, *Locotenent Stoicescu* and *Locotenent Vârtosu*, fitted for minesweeping; 6 ex-Russian floating batteries; and a number of tugs, lighters and other small vessels.

LT. ATANASIU,
SLT. PAVELESCU,
SLT. GHEORGHIU,
SMĂRDAN,
SILISTRA.

No details available.

FRONTIER GUARD VESSELS.

In addition to the Regular Navy, the vessels detailed below compose a separate force, with personnel detached from the regular service, under a Commander, R. Roumanian Navy. These craft are known as *Grupul de Vase ale Granicerilor* (Group of Frontier Guard vessels). They are under the Army, but uniforms worn by personnel are the same as those of Navy, except for aiguillettes corresponding to those of Frontier Guard troops. Headquarters and base are at Braila.

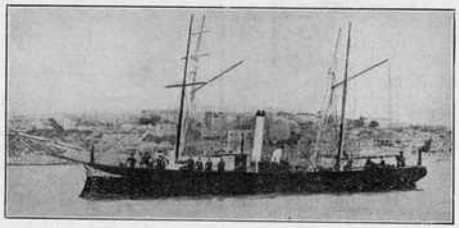
4 Vedettes.

CAPITAN BOGDAN,
MAIOR CONSTANTIN,
MAIOR GIURESCU,
MAIOR GRIGORE ION.

Similar to patrol vessels, page 409.

Police Gunboats. (*Nave de Politie.*)

(Painted grey.)



BISTRITA.

BISTRITA, OLTUL, SIRETUL (Blackwall, 1888). 95·2 tons. Dimensions: 100×13×6½ feet. Guns: 1—6 pdr., 1—1 pdr. H.P., 400 = 12 kts. Oil: 12 tons. Complement, 20.

Police Launches (*Salupe de politie*).*

(All painted grey.)

Rândunica (Galatz, 1900). 10 tons. 46×7·9×3·3 feet. H.P. 25 = 8 kts. Oil: 1½ tons. Complement, 5.

Argesul, Teleorman, Trotus, Vedea (Schichau, Elbing, 1894). 30 tons. 65·6 × 9·8 × 4·9 feet. Guns: 1—1 pdr. Hotchkiss, 1 Nordenfelt M.G. I.H.P. 148 = 10 kts. Coal: 8 tons. Comp., 16.

Granicerul, Pandurul, Poterasul, Santinela, Vegheatorul (London, 1882). 10 tons. 50×7¾×3½ feet. I.H.P. 25 = 10 kts. Oil: 1 ton. Complement, 5.

Porumbita
Soimulet
} Built at Galatz Navy Yard.

* All except *Argesul* class are at present unarmed and used as Communication Tenders.

Motor Launches.

(1) *For service on Lower Danube and Black Sea:—*

4 boats (built by Pattison, Naples, 1921): ***Maior Caracas Petre, Capitan Popescu Constantin, Capitan Constantinescu Traian, Capitan Pantulescu Eugeniu.*** Displacement, 9 tons. 43×9×3 feet. H.P., 150—175 = 15 kts. Guns: 1—37 m/m. on fore deck. Built of steel. Painted white.

(2) *For service on the Danube:—*

8 boats: ***Gr. D1, 2, 3, 4, 5, 6, 7, 8.*** (Gr.=Graniceri, *i.e.*, Frontier Guard. D=Dunare, *i.e.*, Danube.) Displacement, 3½ tons. 31½×6×2½ feet. H.P., 150—175=20 kts. Guns: 1 M.G. Built of wood. Painted white.

(3) *For service on the Dniester:—*

3 boats: ***Gr. N,1, 2, 3.*** (N=Nistru, *i.e.* Dniester.) Displacement, 2·2 tons. 26·2×5·9×1·9 feet. H.P., 24—35=10 kts. Built of wood. Painted white.

(These are Patrol Boats of no military importance.)

Harbour Launches.

Opanez, Rahova, (London, 1882). 45 tons. 55¾ × 11½ × 5¼ feet. Guns: 1—1 pdr. Hotchkiss, 1 M.G. I.H.P. 100 = 8½ kts. Oil: 8 tons. Complement, 10. *Smârdan* a war loss, 1917.

General Note.

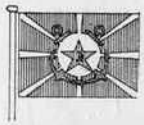
Of the names on this page, *Bistrita* and *Argesul* classes and *Silistra* are geographical; *Granicerul* class are named after various military types; *Porumbita* = Pigeon, *Soimulet* = Sparrowhawk, and *Rândunica* = Swallow; motor launches bear the names of officers killed in action, 1916-18; and *Opanez* and *Rahova* were actions in the war of Independence, 1877.

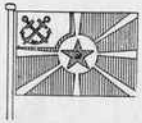
UNION OF SOVIET SOCIALIST REPUBLICS.

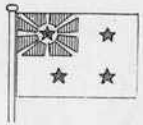
It is extremely difficult to secure accurate information regarding the Russian Navy, but the particulars given in these pages were revised and compared with data from reliable sources in 1933.

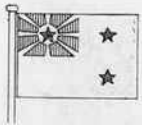
Minister of War and Marine.—K. E. Voroshilov.
Navy Dept.—Admiral Orlov.

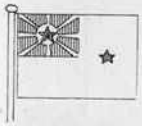
Naval Flags. RUSSIA.

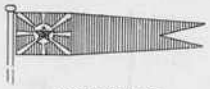

COMMANDER IN CHIEF.

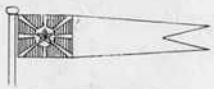

CHIEF OF STAFF.

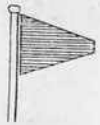

OFFICER COMMANDING NAVAL FORCES.

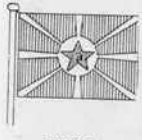

SENIOR FLAG OFFICER.

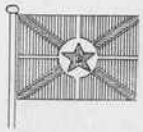

JUNIOR FLAG OFFICER.

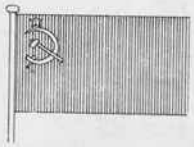

COMMANDER OF FLOTILLA.

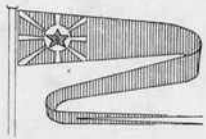

SENIOR OFFICER AFLOAT.


FORTRESS.


ENSIGN.


JACK.


NATIONAL.


PENDANT.

Mercantile Marine.

From "Lloyd's Register," 1933 figures, 441 vessels of 840,261 *gross* tonnage.

UNIFORMS.—Shoulder markings abolished, and rank is now indicated by stripes on cuff. *All* ranks now have gold buttons. Officers' caps have an anchor badge, on a red ground. Ranks are distinguished thus:—

Admiral: ¾-inch top stripe with curl and three stars round curl; two 1-inch lower stripes.
Vice-Admiral: Same as Admiral but only *two* stars.
Kontre-Admiral: Same as Admiral but only *one* star, above curl.
Kapitan (*I Ranga*): Same as Admiral but *no* stars. (British, Captain.)
Kapitan (*II Ranga*): Two 1-inch gold stripes, top with curl. (British, Commander.)
Starshi Leitenant: One 1-inch or ¾-inch top stripe with curl, and *three* ½-inch gold stripes below. (British, Lieutenant-Commander.)
Leitenant: Same as above but only *two* ½-inch gold stripes below. (British, Lieutenant.)
Mitchman: Same as above but only *one* ½-inch gold stripe below. (British, Sub-Lieutenant.)
Pra'porchik: This is an acting rank, about equivalent to Acting Sub-Lieut., in British Navy. One ½-inch gold stripe *without* curl.

Note.—The above particulars relate to changes introduced by the Kerensky Government. Under later Administrations most of these marks of rank in the Fleet and Army were abolished, but have since been restored to a certain extent.

Personnel: 23,600 (about 10,000 seagoing).

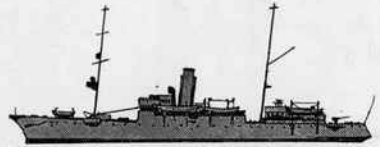
Modern Naval Guns (Obukhoff).

Designation.		Length in Calibres.	Weight of Guns.	Weight of A.P. Shot.	Initial Velocity (approximate).	*Maximum* Penetration with A.P. Capped Shell against K.C. Armour.			Danger Space against average warship at			Usual Rounds per minute.
						10,000 yds.	5000 yds.	3000 yds.	10,000 yards.	5000 yards.	3000 yards.	
C.M.	inch.	calibres.	tons.	lbs.	*f.s.*	in.	in.	in.	yards.	yards.	yards.	
30·5	12	52	48·2	714	3000	...	14½	20	...	...	...	...
	6	45	7½	89	2900	...	4½	6	60	250	485	3
	6	45	7	89	2600	...	3¼	5	50	200	430	3
13·0	5·1	55/60	...	...	...	...	...	...	...	...	..	...
12·0	4·7	50	2¼	46	2600	...	...	...	...	...	...	about 4
10·0	4	60	...	...	...	...	...	...	...	...	...	...
7·5	3	60	14 cwt.	13½	2700	...	...	...	...	...	...	...
6·3	3	35	12 ,,	13½	2600	...	...	...	...	...	...	...

(B)—*Baltic.* (BS)—*Black Sea.* (C)—*Caspian.*

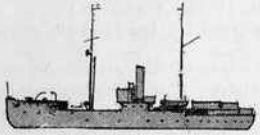
MINREP *class.* (B)

ZNAMYA-SOZIALISMA. (B.S.)



DEVIATOE-YANVARYA. (B) PERVOE-MAYA. (B.S.)

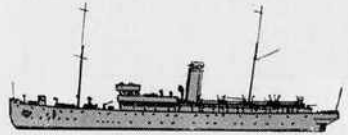
KRASNAYA-ZNAMYA. (B)



KRASNII-GORN. (B)
KRASNII-LENINGRAD. (B)

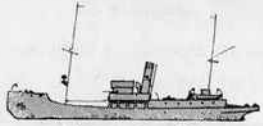
KRASNII ASERBAIDSCHAN. (C)
LENIN. (C)

VOROVSKY (China)



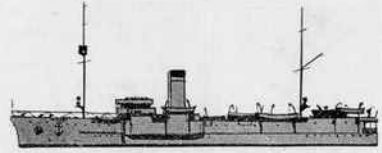
KRETCHET. (B)

PIONER, KOBTSCHIK, ABREK. (B)



ISKRA *cl-ss.* (B)

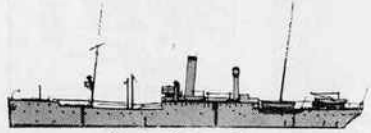
TREVOLEV, (B) LENINGRAD SOVIET. (B)



"25 OKTIABRYA." (B)

MINELAYERS No. 1, 2 *et seq.* (B)
KUBANJ, JAUSSA, BERESINA.

UDARNIK *class.* (B)



SERP-I-MOLOT. (B)

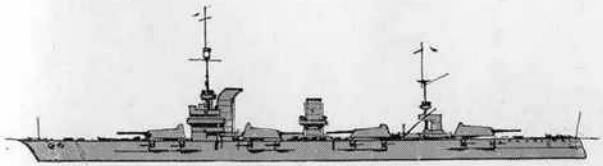
KRASNAYA ZVIEZDA. (B)

TOVARISHTCH *class.* (B)

DEKABRIST *class.* (B)

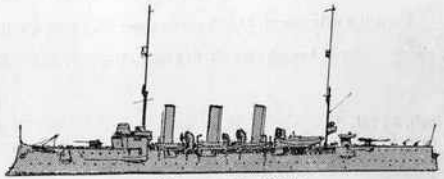
KOMMUNIST *class.* (B)

(B)—*Baltic.* (BS)—*Black Sea.* (C)—*Caspian.*

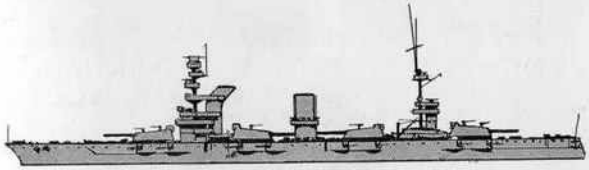


PARISHKAYA-KOMMUNA. (B.S.)

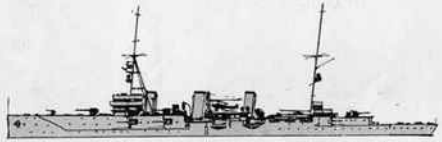
KOMSOMOLETZ. (B)



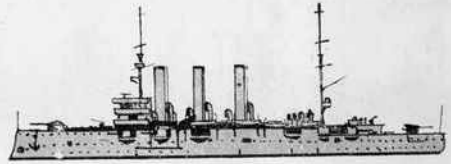
KOMINTERN. (B.S.)



MARAT *class.* (B)



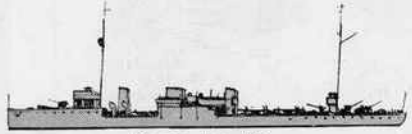
VOROSHILOV, (B) PROFINTERN, TCHERVONAYA UKRAÏNA. (B.S.)



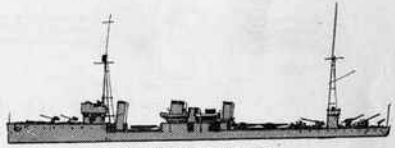
AURORA. (B)

AMUR. (B)

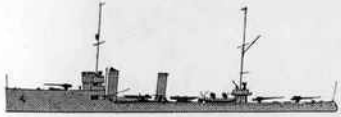
MARKIN *class.* (C)



STALIN *class.* (B)
(*Some have Tripods*)



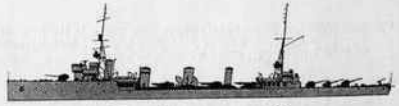
KARL MARX *class.* (B)
(*Note forecastle guns*)



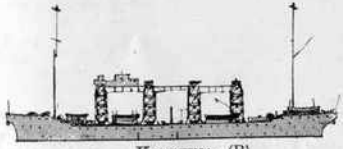
GAIDAMAK *class.* (B)

KONSTRUCTOR. (B).

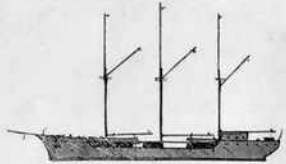
PETROVSKI *class.* (B.S.)



KARL LIEBKNECHT. (B)



KOMMUNA. (B)



UTCHEBA (*Training Ship*). (B)

MARTI, ZAVYETNI. (B.S.)

BADINA, SCHMIDT. (B.S.)

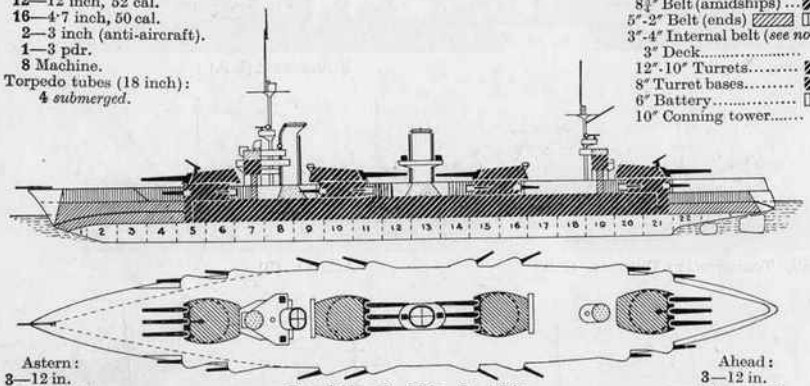
PARISHSKAIA-KOMMUNA (ex-*Sevastopol*, June, 1911), **MARAT** (ex-*Petropavlovsk*, Sept., 1911), **OKTIABRSKAIA-REVOLUTIA** (ex-*Gangut*, October, 1911), **MIHAIL FRUNZE** (ex-*Poltava*, July, 1911).

Normal displacement, 23,370 metric tons; *full load*, about 26,000 tons. Complement, 1125.

Length *over all*, 619 feet. Beam, 87 feet. *Mean* draught, 27½ feet.

Guns:
12—12 inch, 52 cal.
16—4·7 inch, 50 cal.
2—3 inch (anti-aircraft).
1—3 pdr.
8 Machine.
Torpedo tubes (18 inch):
4 *submerged*.

Armour (Krupp):
8¾" Belt (amidships) ...
5"-2" Belt (ends)
3"-4" Internal belt (*see notes*)
3" Deck.....
12"-10" Turrets.....
8" Turret bases.....
6" Battery.....
10" Conning tower.....



Astern:
3—12 in.
2 to 4—4·7 in.

Broadside, 12—12 in., 8—4·7 in.

Ahead:
3—12 in.
2 to 4—4·7 in.

Machinery: Parsons turbine. 4 screws. Boilers: 25 Yarrow. Designed H.P. 42,000 = 23 kts. Coal *normal*, 1000 tons; *maximum*, 3000 tons. Also 1170 tons oil. Radius of action: 900 miles at 23 kts., 4000 miles at 16 kts.

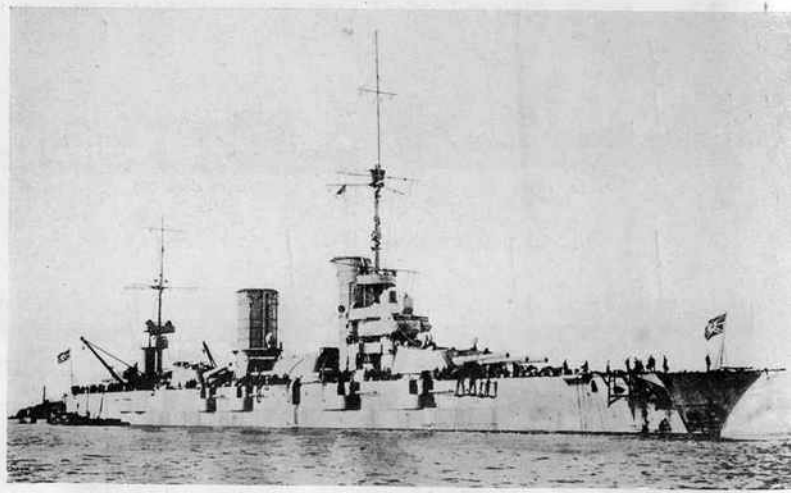
Gunnery Notes.—The port plate above each gun is in the form of a hinged flap, allowing each 12-inch gun to elevate to 30—40° *maximum*. Arcs of fire: End triple 12-inch barbettes, 310°; central barbettes, 130° *each beam*; aft group of 4—4·7 inch, 90°; other 4·7 inch, 85°.

Armour Notes.—Belt is about 15 feet wide, 5 feet of it below water, uniform thickness. There is a *secondary* 3"-4" internal belt 11 feet inboard above protective deck, extending between the end barbettes. The space between main belt and internal belts is divided up into w.t. compartments.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials: Full power*	*Boilers*	*Best recent speed*
Marat	Baltic Works	Baltic Works	June, '09	Jan. '14	About 50,000 = 23·4	Yarrow	20
P. Kommuna		Franco-Rus. Works	June, '09	Jan. '15			16
Okt. Revolutia	Galernii			Jan. '14	=23·6		18
M. Frunze				Jan. '15			

General Notes.—The late Gen. Vittorio Cuniberti prepared the original designs for this type. The Ministry of Marine afterwards altered the plans to include Russian ideas of armouring, ice-breaking bows and other special features. Further, to obtain a higher speed, hull design is relatively lighter than in contemporary battleships of other fleets. Said to be most unhealthy, insanitary and badly ventilated.

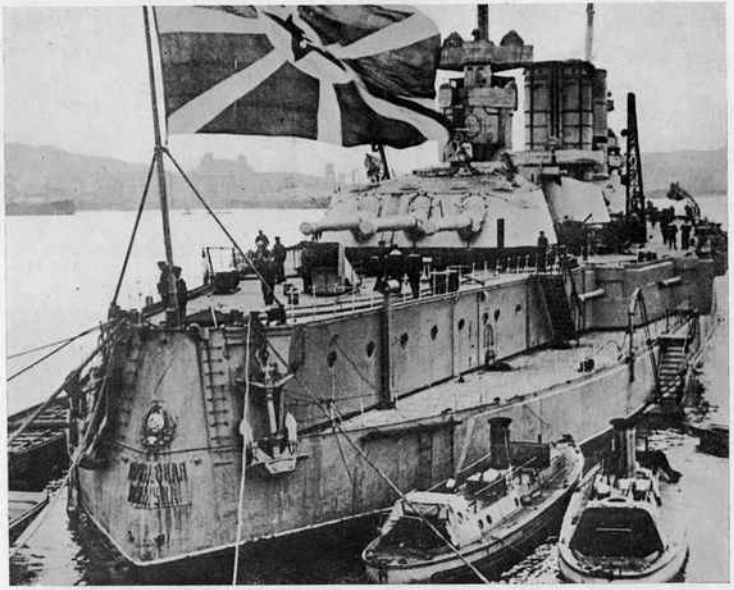
"MARAT" (after refit). 1922 "*Var Flotta*."



PARISHSKAIA-KOMMUNA. 1930 *Photo.*

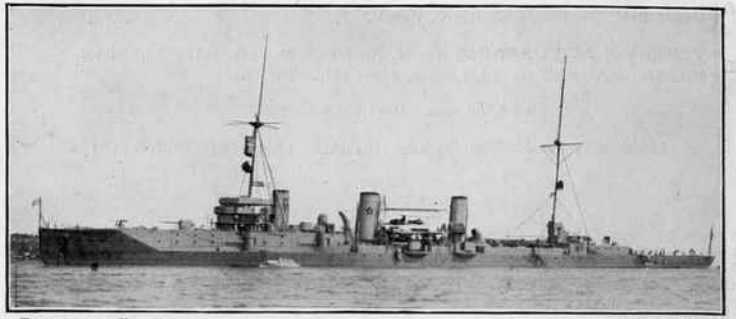
P. KOMMUNA during last general refit had fore-funnel raised and fitted with a cowl-like top, and bows extended and built with an overhang. Proceeded to Black Sea early in 1930 in company with "*Profintern*." General condition reported to be unsatisfactory, and official explanation of her remaining in Black Sea is that she could not face the return voyage.

Battleships.



PARISHKAIA-KOMMUNA. 1930 *Photo.*

Cruisers.



TCHERVONAYA UKRAÏNA. 1928 *Photo.*

PROFINTERN. 1931 *Photo.*

1913 Cruisers.

A { **PROFINTERN** (ex-*Sovnarkom*, ex-*Klara Zetkin*, ex-*Svietlana*, June, 1915. Reval).
VOROSHILOV (ex-*Ad. Butakov*. Reval).

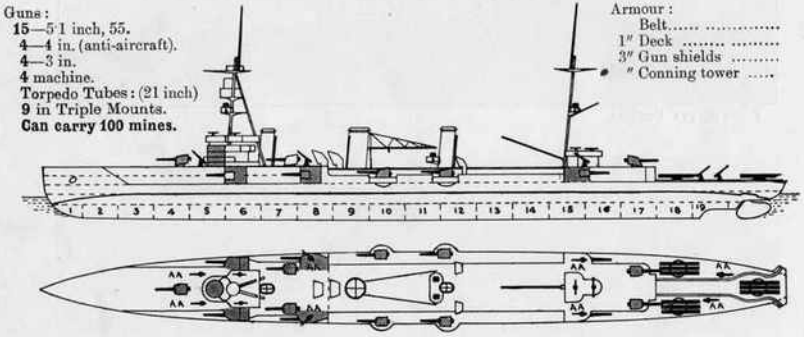
B { **TCHERVONAYA UKRAÏNA** (ex-*Ad. Nakhimoff*, October, 1915. Nicolaiev).
KRASNI-KAVKAZ (ex-*Ad. Lazarev*, June, 1916. Nicolaiev).

A=6,800 tons. B=7,600 tons.

Length, 507¾ feet. Beam, 50½ feet. Draught, 18½ feet (A) 20¼ feet (B)

Guns:
15—5·1 inch, 55.
4—4 in. (anti-aircraft).
4—3 in.
4 machine.
Torpedo Tubes: (21 inch)
9 in Triple Mounts.
Can carry 100 mines.

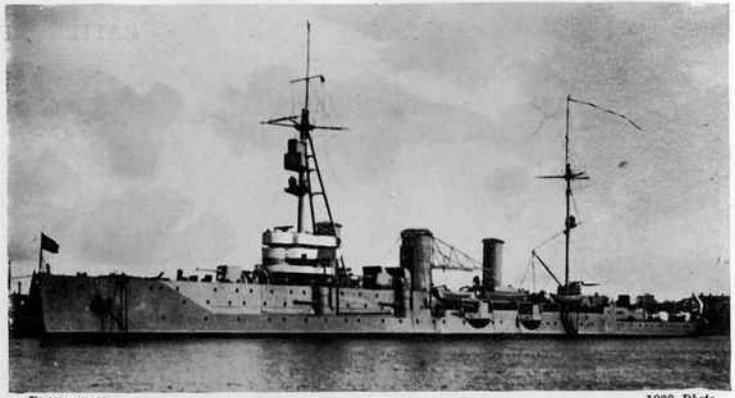
Armour:
Belt..... .....
1″ Deck ....
3″ Gun shields .....
″ Conning tower .....



Machinery: Brown Curtis or Parsons turbines. Boilers: A=13: B=14 Yarrow. H.P. 50,000=29·5 kts. Coal: 540 tons. Oil: 690 tons. Radius of action: 470 miles at full speed, 3700 at 14 kts.

General Notes.—Built under the 1912 Naval Programme and laid down in 1913. Construction was held up for many years, *T. Ukraïna* being the first to be completed in December, 1924, followed by *Profintern* in January, 1925. *Krasni-Kavkaz* was completed at the Imani Yard about February, 1930, and two more of the class remain under construction. It is reported that *Ad. Kornilov* was launched in October, 1929 and named *IIId Internationale*: present state of *Ad. Istomin* is uncertain. *Ad. Grieg* and *Ad. Spiridov* were turned into oilers and named *Azneft* and *Grozneft*. *Profintern* towed to Leningrad for completion 1918. Proceeded to Black Sea, 1930, staying for repairs at Brest and Naples, where it is reported that her condition was very unsatisfactory and that only minor repairs would be undertaken. Has always been described as having 3 inch armour for full length over main and lower decks, but from inspection it appears that there is no special side armour; apparently the hull is built of thicker plating than usually obtains. Armour has therefore been deleted from above plan and exact protection is uncertain.

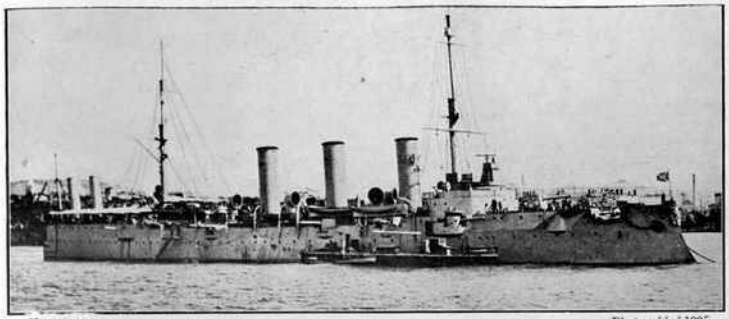
Gunnery Note.—It is reported that *K. Kavkaz* is armed with 10—5·1 inch and 4—4·7 inch guns. The two "B" type may have the extra protection allowed by difference in displacement.



PROFINTERN. 1930 *Photo.*

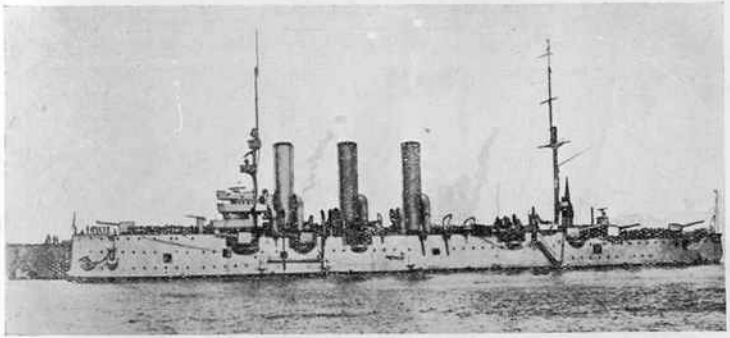
PROFINTERN. 1930 *Photo.*

1900 Cruiser.



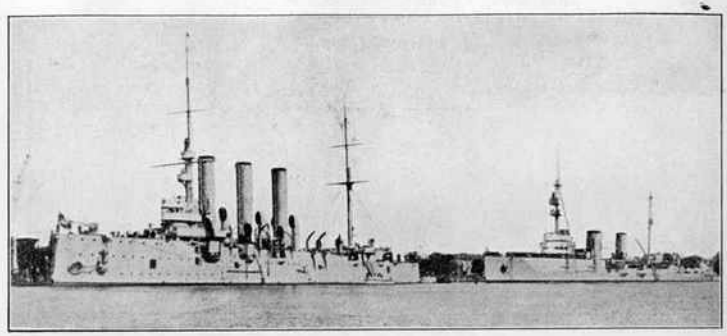
KOMINTERN. *Photo added* 1925.

KOMINTERN (ex *Pamiat Merkuria*, ex-*Kagul*, June, 1905). 6750 tons. Dimensions: 436 × 54 × 20½ feet. Complement, 573. Guns: **14**—5.1 inch, **4**—3 inch AA., **2** M.G. Torpedo tubes: **2**—18 inch (*submerged*). Armour: 1″—3″ deck, turrets and casemates. Machinery: Triple expansion. 2 screws. Boilers: 16 Normand Designed H.P., 19,500 = 23 kts. Coal: *normal* 700 tons, *maximum* 1,100 tons. Refitted and rearmed, employed as sea-going training ship.



AURORA. 1930 *Photo.*

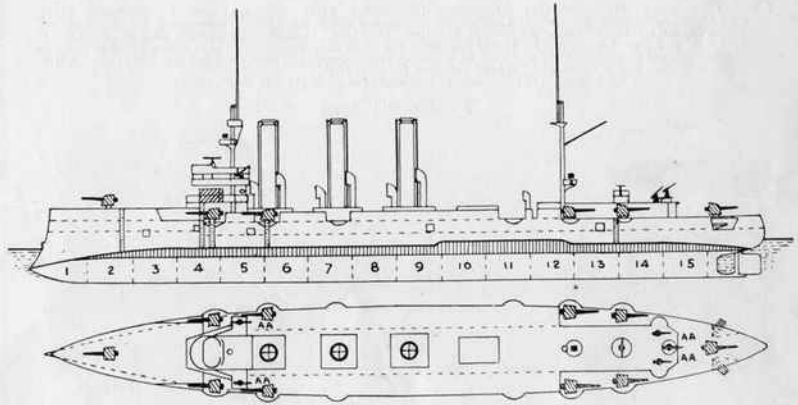
1896 Cruiser.



AURORA (ex-S.S.S.R.) PROFINTERN.

August, 1929, *Photo by favour of H. C. Bywater, Esq.*

(At present Seagoing Training Ship.)



AURORA (ex-*S.S.S.R.**, ex-*Aurora*, May, 1900). 6,830 metric tons. Complement, 590. Dimensions: 410 (*w.l.*) × 55 × 21¼ feet (*mean draught*). Armament: **10**—5·1″, 45 cal., **5**—6 pdr. AA., **2** M.G. Formerly carried 125 mines and **2** *submerged* torpedo tubes (*broadside*). Machinery: 3 sets horizontal 3-cylinder. Designed H.P. 11,600 = 20 kts. 3 screws. Boilers: 24 Belleville. Coal: *normal*, 960 tons; *maximum*, 970 tons. Complement, 573. Laid down Oct. 31st, 1896; completed 1903. Still in nominally effective state, but speed reduced to 17 kts. Sister ship *Diana* has been sold for scrap.

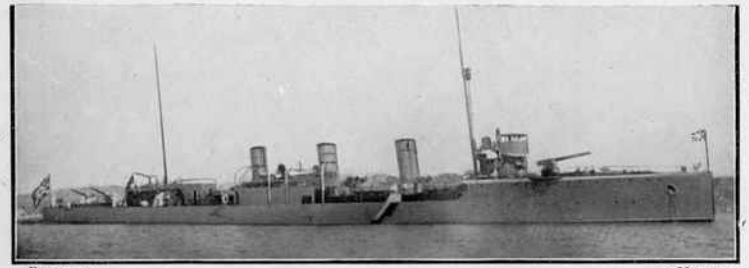
*These initials stand for *Soyus Sovietskii Sozialisticeskii Respoblik*, meaning "Union of Soviet Socialist Republics."

(*Note to Plan.*—Uncertain whether large ports at stern are for mine-laying or torpedo tubes, but the latter is reported.)

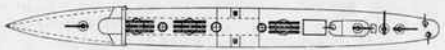
38 Destroyers. (*Eskadrenyi Minonosetz.*)

(Other Destroyers still exist, but are no longer of any fighting value.)

7 Petrovski type.



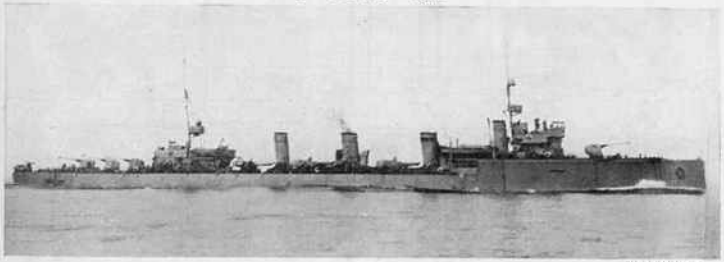
PETROVSKI. 1928 *Photo.*



7 boats: ***Vorovski*** (ex-*Kertch*, 1917). ***Kalinine*** (ex-*Gadjibey*, 1917). ***Nezamojnik*** (ex-*Feodinissi*, 1917), ***Felix Dzerzhinski*** (ex-*Kaliakria*, 1928), ***Nezamojni*** (ex-*Zante*, 1917), ***Petrovski*** (ex-*Korfu*, 1917), ***Shaumyan*** (ex-*Lesbos*, 1917). All built at Nicolaieff. 1326 tons. Dimensions: 303½ × 29½ × 9 feet. Armament: 4—4 inch, 4—9 pdr., 1—9 pdr. AA., 12—18 inch tubes * in triple deck mountings. Originally designed to carry 80 mines of pre-war pattern, but will now have 45 of heavier type. Turbine engines. Oil fuel only: 390 tons. S.H.P. 29,000=33 kts. Complement, 161. *Khadji* removed from list 1931.

* A fourth set of tubes may be mounted in some in place of deck house.

1 "Novik" type



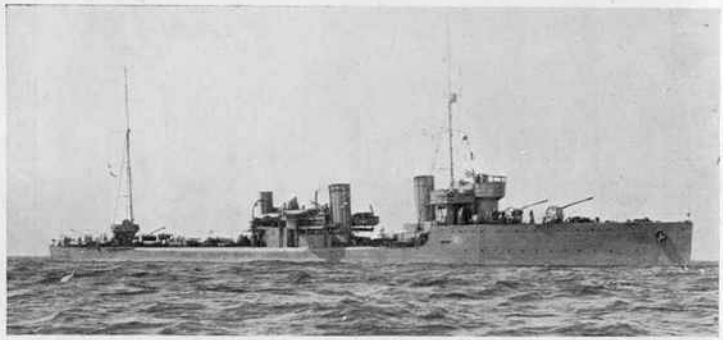
1932 *Photo.*

Karl Liebknecht (ex *Novik*). Built 1910-12. Rebuilt and re-armed 1931. Dimensions: 336 × 31 × 9½ feet. Displ.: 1262 tons. D.H.P. 36,500=36 kts. 3 A.E.G. Turbines. 6 Vulcan boilers. Oil: 400 tons. Complement, 112. Guns: 4—4 inch. 4 M.G. 9—18 inch tubes.

Note.—Recent alterations include enlarged bridge, tripod masts, extension of forecastle, and shifting of after-superstructure, and main mast. Employed on cruiser duties: on Trials 1915=35·7 kts.

This ship may be renamed as there is a *K. Liebknecht* of the "Uritsky" class.

4 Karl Marx type (Mine Layers).

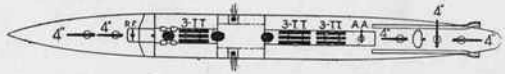


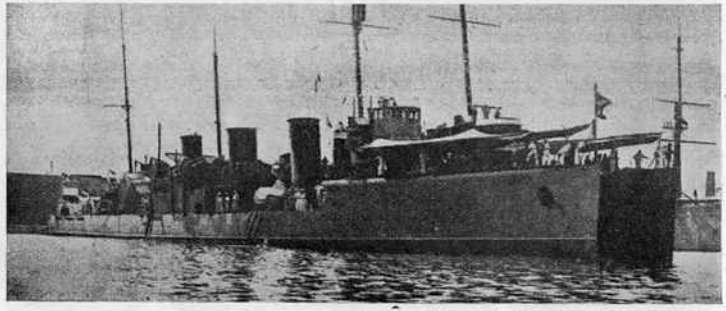
KARL MARX. 1932 *Photo.*

4 *Reval Shipbuilding Co.*: ***Karl Marx*** (ex-*Isyaslav*), ***Kalinin*** (ex-*Priamislav*) (1914). ***Briatchislav, Feodor-Stratilat.*** 1350 tons. Dimensions: 344½ × 31½ × 9¾ feet. Designed H.P. 32,700 = 33 kts. (Trials reported to have given 32 kts.) Parsons turbines and Normand boilers. Armament: 5—4 inch, 2—3 inch AA., 2 M.G. Torpedo tubes (18 inch): 9, in 3 triple deck mountings. Oil: 450 tons. 60 mines carried. Complement, 167. Commenced 1912. Completed 1923.

Note.—These vessels were built to the designs of Chantiers et Ateliers Augustin Normand, Le Havre.

Briatchislav and *F. Stratilat* are former Czarist names: the ships are at present known by letters only.

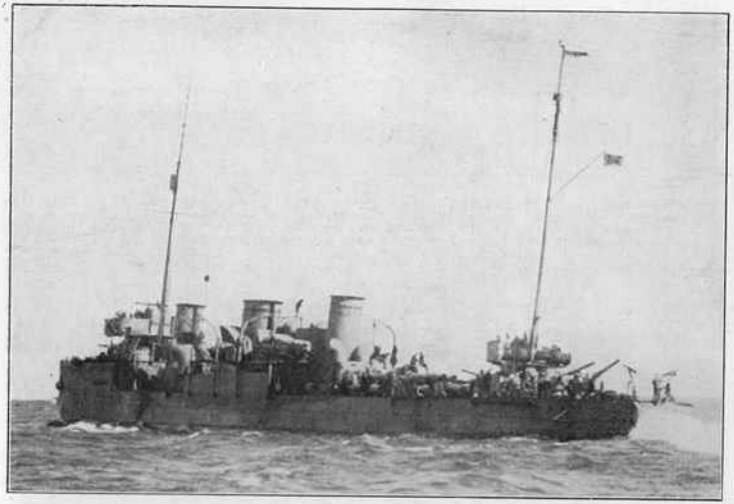




1930 *Photo.*

Frunze (ex-*Bistri*, 1915). (Refitted and rearmed 1928). 1100 tons. Complement, 156. Dimensions: 321¼ × 30½ × 12½ feet. Armament: 2—4·7 inch, 6 smaller. AA., 4—21 inch tubes, 80 mines. Boilers: 4 Thornycroft. 2 screws. Oil: 350 tons. H.P. 23,000=34 kts.

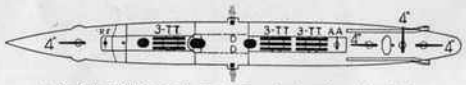
14 Uritsky type (Mine Layers).



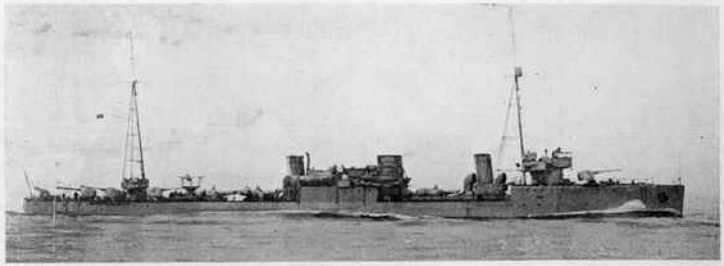
ENGELS.

3 Leningrad Metal Works: ***Yakob-Sverdlov*** (ex-*Orphei*, 1914), ***Volodarsky*** (ex-*Pobieditel*, 1914), ***Uritsky*** (ex-*Zabiaka*, 1914).
1,610 tons (*normal*). Dimensions: 321·5 × 30·5 × 9·3 feet.
Guns: 4—4", 2—9 pdr. AA., 2 M.G. Tubes: 9—18".
H.P. 32,000 = 35 kts. Thornycroft Boilers. Complement, 157.
Carry about 45 mines. Oil: 400 tons.
1 Russo-Baltic Co., Reval: ***Svoboda.****
4 Leningrad Metal Works: ***Tovarishtch-Artem*** (ex-*Zinoviev*, ex-*Azard*), ***Engels*** (ex-*Desna*), ***Stalin*** (ex-*Samsun*), ***Rykov*** (ex-*Lietoun*), all 1914.
6 Putilov Works, Leningrad: ***Karl-Liebknecht*** (ex-*Kap. Lt. Belli*), ***Voikov*** (ex-*Trotsky*, ex-*Leit Ilyin*), ***Lenin*** (ex-*Kap. 2r. Izylmettiev*), ***"A"*** (ex-*Konon-Zotov*), ***"B"*** (ex-*Kap. Kern*), ***"C"*** (ex-*Leit. Dubassov*).†

Displacement: 1260 tons. Dimensions: 314¾ × 30¼ × 9¾ feet. Designed H.P. 30,000 = 35 kts. (Present best speeds vary between 28 and 32 kts.) All have turbines and oil fuel only. Thornycroft boilers. Armament: 4—4 inch, 2—9 pdr. AA., 2 M.G. Torpedo tubes (18 inch): 9 in. 3 triple deck mountings. Were designed to carry 80 mines of pre-war pattern; believed that they now have only 45, of heavier type. Complement, 157. Oil: 400 tons. 1912 Programme. Built 1914—1918.



* Sunk in 1919: raised, repaired and entered service 1932.
† Present names not known. Re-entered service 1932.



LENIN. (As refitted this class are receiving tripod masts.) 1932 *Photo.*

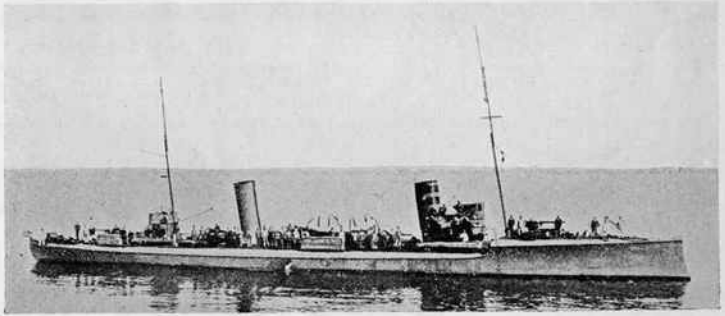
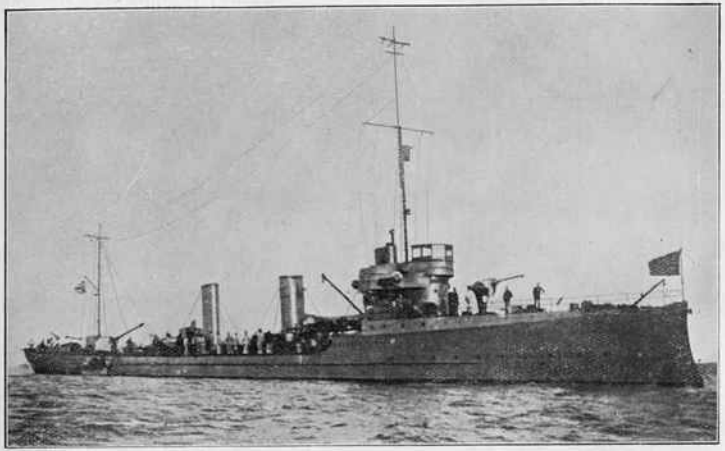


Photo added 1933.

Martynov (ex-*Vnushitelni*). Schichau, 1908.
375 tons. H.P. 6,200 = 28 kts. (21 kts. present speed.)
Coal: 125 tons: Complement, 69.
Guns: 2—75 mm. Tubes: 2—18".
Carries 15 mines.
Employed as a mine layer and mine sweeper.

3 Markin type (Mine Layers).

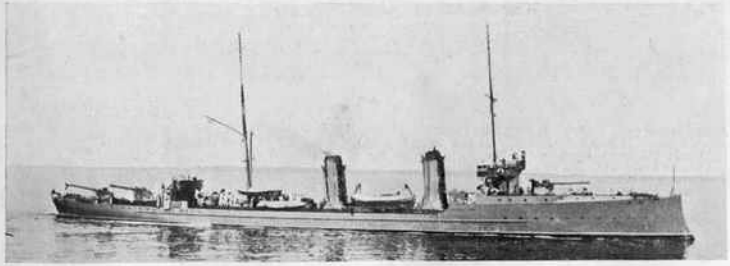


BABINSKY RABOTCHY. *Photo, Dmitri Novik (added 1929).*

3 "*Markin*" class, named ***Alfater*** (ex-*Turkmenetz-Stavropolski*), ***Markin*** (ex-*Ukraina*) ***Babinsky Rabotchy*** (ex-*Voiskovoi*) (all 1904). Built by Lange's Yard, Riga. 580 tons. Dimensions: 240 × 23¾ × 7¼ feet. Designed H.P. 6200 = 25 kts. Boilers: 4 Normand. Coal: 50 tons *normal*, 135 tons *full load*. Complement, 88-85. Armament: 3—4 inch, 1—1 pdr., 2 M.G., and 2 torpedo tubes (18"). Carry 16 mines.

Present Speeds: *Markin*, 23 kts. *Alfater* (Senior Officer of Caspian Flotilla), 20 kts. *Babinsky Rabotchy* probably less.

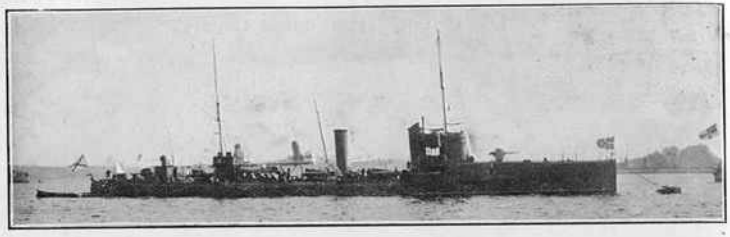
1 Mine Layer.



KONSTRUCTOR. 1932 *Photo.*

1 *Krodratenko* type: ***Konstructor*** (ex-*Sibirski-Strelok*, Helsinski, 1906). 625 tons. Guns: 3—4", 2—3 pdr. AA. Tubes: 2—18". 50 mines. H.P. 7,300 = 25 kts. Coal: 215 tons. Complement: 101. (Serving as Leader of Mine Layers.)

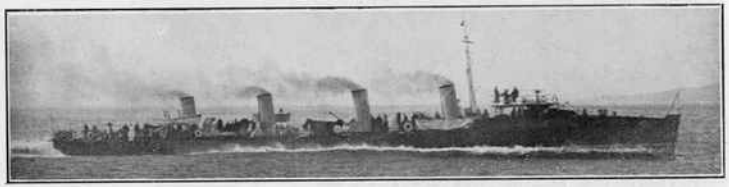
3 Zhelesniakov type (Mine Layers).



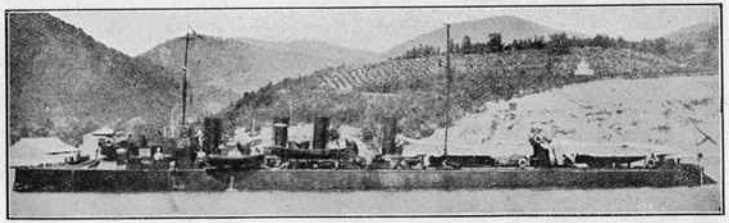
3 *Zhelesniakov* class, named ***Sladkov*** (ex-*Vsadnik*). (Krupp 1905), ***Zhelesniakov*** (ex-*Amuretz*, Riga, 1905), ***Ussourietz*** (Helsingfors, 1907). 710 tons. Dimensions: first ship, 223 × 24.2 × 7.5 feet, other two 233 × 23.6 × 7.8 feet. Designed H.P. 6500 and 6200 respectively = 25 kts. Coal: 205 tons. Complement, 105. Guns: 3—4 inch, 1—3 pdr., 1—1 pdr. AA., 4 M.G. Tubes: 3—18 inch. Carry 25 mines.

Note.—Present best speeds: 22-24 kts. *Sladkov*, of this type, reported scrapped or non-effective.

3 Mine Layers (*Minonosetz*).



1 *Laird* type: ***Marti*** (ex-*Zavidni*, 1905). 420 tons. Dimensions: 210 × 21 × 7 feet *mean* draught. H.P., 5,700 = 26 kts., originally. Boilers: 4 Yarrow. Fuel: 90 tons coal + oil. Armament: 2—11 pdr., 2 M.G., 2—18 inch tubes. 18 mines.



2 *Yarrow* type: ***Badina*** (ex-*Stroyi*), ***Schmidt*** (ex-*Svirepi*, 1901). 376 tons. Dimensions: 190 × 18½ × 5 feet. Coal: 70 tons. Guns: 2—11 pdr., 2 M.G. Tubes: 2—15 inch. Carry 12 mines. H.P., 3,800 = 26 kts., originally. Employed as tenders at Sevastopol. *Schmidt* refitted 1923. *Badina* reported non-effective.

Note.—*Marti* also reported as ex-*Svirepi* and *Schmidt* as ex-*Zavidni*.

22 Submarines (*Podvodniya Lodki*).

3 boats: ***Dekabrist, Narodnowolyets*** both 1929, and ***Krasnogwardejets,*** Baltic Yard, Leningrad. *Surface* displacement: 850 tons. Dimensions: 279 × 23 × 16½ feet. Guns: 1—4 inch. Tubes: **10.** Speed: 17⅝ kts. Radius on *surface*: 7000 miles at 9 kts.; *submerged* 105 miles at 5 kts. A vessel of this type reported lost on trials, Sept., 1927, "BEZBOJNIK" ("Godless"), is said to be a fourth vessel of this class.

3 boats: ***Spartakovetz, Yakobinetz, Revoluzioner,*** reported building. No details available.

10 Bubnov Type.

TOVARISHTCH (No. ?).

KRASNOARMEYETZ (No. 4). *Both* 1930 *Photo, Lt.-Comm. R. Steen Steenson.*

(Dimensions of all: 223 × 14⅝ × 12¾ feet. Displacement: 650/784 tons).

1 *Edinorog* type: ***Proletari*** (ex-*Zmieya*) (Nobel & Lessner, Reval, 1912-17). Guns: 1—14 pdr. AA., 1 M.G. Tubes: 4. Dropping gears, 8. (Reported no longer effective.) H.P. 2640/900. Speed: 16/9 kts. Oil: 40 tons. Compl. 50.

8 *Bolshevik* type: ***Bolshevik*** (ex-*Ryss*), ***Komissar*** (ex-*Pantera*), ***Kommunar*** (ex-*Tigr*), ***Krasnoflotetz*** (ex-*Yaguar*), ***Krasnoarmeyetz*** (ex-*Leopard*), ***Tovarishtch*** (ex-*Tur*), ***Rabotchi*** (ex-*Yorch*), ***Bedniak*** (ex-*Kougouar*). All built by Nobel & Lessner, Reval 1915-16. Guns: 2—75 mm., 1 M.G. Tubes: 4. Dropping gears: 8. H.P. 500/900 or 2,400/900. Speed: 10/9 or 18/10 kts.

1 Special boat: ***Batrak*** (ex-*Volk*), 1917. Guns: 4 small. Tubes: 4. H.P. 2600/900 = 16/9 kts.

Note—***Rabotchi*** No. IX was sunk in the Baltic May 26th, 1931. Since raised and repaired.

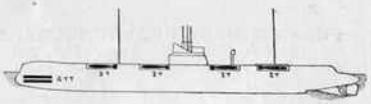
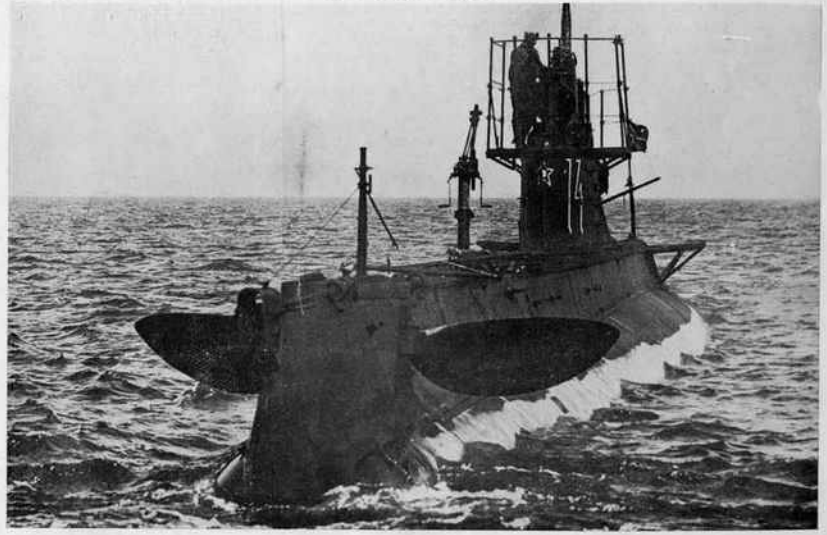


Photo added 1930.

1 *Improved Bubnoe* type: ***Politruk*** (ex-*Nerpa*, 1911-15). Displacement: 650/784 tons. Dimensions: 220 × 14½ × 12¾ feet. H.P., 560 = 10 kts. *on surface*, 1400 = 11.7 kts. *submerged*. Fuel: 21 tons. Guns: 2—3 inch, 1—6 pdr. Tubes: 4. Dropping gears: 4.

1 ex-British ***"L.55."*** Displacement: 845/1150 tons. Dimensions: 230½ (*p.p.*), 235 (*o.a.*) × 23½ × 13½ feet. Guns: 1—4 inch, 1 M.G. Tubes: 6—21 inch, all in bows. Machinery: 2 sets 12-cylinder solid injection. Vickers type Diesel engines. Oil: 78 tons. D.H.P. 2400/1600—17·5/10·5 kts. Lost in the Baltic, 1919, and subsequently raised, repaired, and put into service 1931. Sunk Oct., 1931, but now again in service for training purposes.

4 Holland Type.



1930 *Photo.*

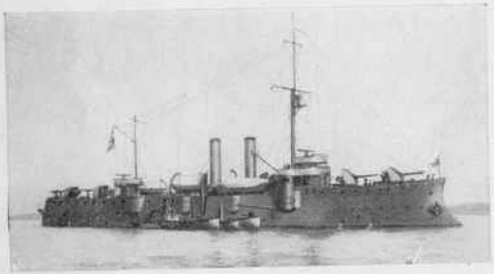
(All boats now carry identification numbers.)

4 *Holland* type: ***Politrabotnik*** (ex-*AG 26*) 1916—1924; ***Shakhtor (AG 23,*** ex-*Nezamuzhnyaya*) 1916—1920; ***Kommunist (AG 24)*** 1916–1922; ***Marxist (AG 25*** ex-*Kamenec*, 1916–1922. Displacement: 375—467 tons. H.P. 480 = 13 kts. *on surface*, 320 = 11 kts, *submerged*. Guns: 1–6 pdr., 4—18 inch tubes. Dimensions: 150½ × 15¾ × 15½ feet.

Gunboats.

KRASNAYA ZNAMYA (ex-*Khrabri*, 1895). 1740 tons. Compl. 197. Guns: **5**—5·1″, **1**—3″, **3**—3 pdr. Armour: 5″ belt amidships, 3″ ditto aft. H.P. 2000 = 14 kts. Coal: 160 tons. Built by Burmeister & Wain, Copenhagen.

Note.—Re-fitted and re-armed for service as Gunnery School Tender, 1916.



KRASNAYA ZVIEZDA (ex-*Khivinetz*) (1905). 1340 tons. Compl. 161. Guns: **4**—5·1″, **2**—3 pdr. AA. H.P. 1400 = 13½ kts. Coal: 190 tons. (Re-fitted 1916.)

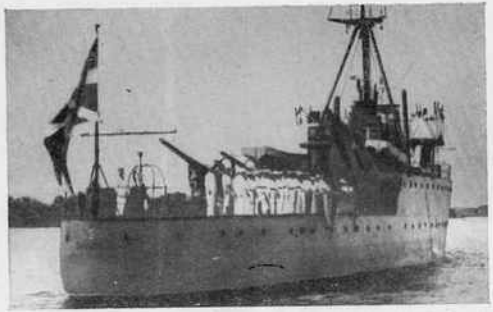
Photo added, 1922.

ZNAMYA SOZIALISMA (ex-*Teretz*, 1887). 1295 tons. Compl. 135. Guns: **3**—5·1″, **2**—3″. H.P., 1500 = 11 kts. Coal: 220-237 tons. Employed as Submarine Tender and School Ship.

Gunboats.

LENIN, KRASNIIVOSTOK (ex-*Trotsky*) (1910). 950 tons. Compl. 104. Guns: **4**—4.7″, **6** M.G. Armour: 4½ inch turrets. Machinery: Nobel-Lessner Diesel motors. H.P. 1000 = 11 kts. (Amur Flotilla.)

KRASNOYE ZNAMYA, TRUD (ex-*Biednota* 1907). 190 tons. Guns: **2**—4·7″, **2** M.G. H.P. 500 = 11 kts. Fuel: 145 tons. (Amur Flotilla.)



KRASNII-ASERBAIDSCHAN. 1931 *Photo.*

KRASNII-ASERBAIDSCHAN (ex-*Trotsky*, ex-*Ardagan*). **LENIN** (ex-*Kars*). (Both 1909). 630 tons. Guns: **2**—4·7″, **2**—4″, **4** M.G. Diesel: 1000 H.P. = 11 kts. Compl. 126. Radius = 2270 miles at 10 kts.

Mine Layers.

25 OKTIABRYA (*ex-Narova*, *ex-General Admiral*, 1872.) 5030 tons. Guns: **4**—3″, **4** M.G. 600 mines. Speed about 9 kts. (Mine laying Training Ship.)

ZAPAL. 1932 *Photo.*

MINREP. 1932 *Photo.*

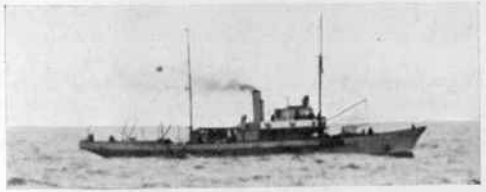
FUGAS, MINREP, PROVODNIK, ZAPAL, YSRYW (1911). 150 tons. Guns: **2**—3 pdr. H.P. 300 = 10 kts.
Also about 14 Trawlers and other small craft, including ex-Torpedo Boats, *Artemiev* (ex-*Vinoslivi*), *Martinov* (ex-*Vnushitelni*), *Roshal* (ex-*Dmitriev*) *Zhemshuzni* (ex-*Sverev*), are fitted as Sweepers.

Mine Layers.

1932 *Photo.*

DEVIATOË YANVARYA (ex-*Volga*, 1905). 1711 tons. Complement, 266. H.P. 1600 = 13 kts. Babcock boilers. Armament: **4**—3 pdr. Carries 236 mines. Coal: 160 tons. Present best speed, 10 kts.

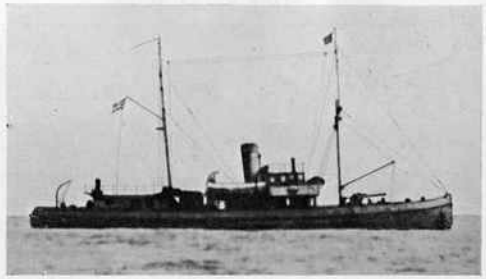
PERVOE MAYA (ex-*Dunai*, 1891). 1620 tons. Complement, 234. Guns: **3**—3 inch, **2** M.G. Speed: 13½ kts. Coal: 130 tons. Carries 250 mines. Present efficiency questionable.



1932 *Photo.*

YAUSSA, BERESINA, KUBANJ. 400 tons. Guns: **2**—75 mm. **2** M.G. 90 mines.

Mine Sweepers.



UDARNIK. 1932 *Photo.*

KAPSUL, KLIUZ, KRAMBOL, NEVOD, SCHTIT, STRELA, UDARNIK, YAKOR, ZMEYA, ISKRA, IJORA (ex-*Plamya*). **TRETII INTERNATIONAL** (ex-*Patron*, Middlesbrough, 1913-14). 500 tons. Dimensions: 146 × 24½ × 10 feet. Guns: **2**—11 pdr. H.P. 650 = 11 kts.

Despatch Vessels.

PIONIR. 1932 *Photo.*

PIONIR, ABREK, KOPCHIK. 500 tons. Speed: 12 kts. Guns: 2—4 inch.

A number of other small vessels are also in commission in Black Sea ports, though of no fighting value. These include the ex-Torpedo Boat **LIETCHIK** (employed as Aircraft Tender), and **KRASNII MORIAK.** The last-named is serving as the Yacht of the Commander-in-Chief of the Black Sea Fleet.

Despatch Vessels.

RAZVYEDCHIK and **DOZORNII** (both 1904). 100 tons. Complement, 23. Guns: **1**—1 pdr., **1** machine. Speed, 16 kts. Both re-fitted 1915-1916.

KRETCHET (ex-S.S. *Polaris*, of Finnish S.S. Co.) (Dundee, 1899). 2011 tons gross. Guns: **4**—3 inch AA. H.P. 2500 = 12 kts. Cylindrical boilers.

Note.—Kretchet at present serves as Administrative Flagship and Staff Headquarters for Baltic Fleet.

SHESTNADZATAVO OKTABRYA (ex-*Yastreb*). 150 tons. Speed 10 kts. No details available.

A number of motor patrol boats also exist, but details are uncertain. 15 new vessels of C.M.B. type are projected, but it is not known definitely whether any have been begun.

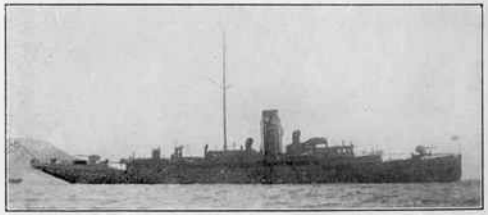
BAKAN 900 tons. 11 kts. Guns: **2**—3 inch. **4** M.G.

NEVA, MINJER KOPANETZ. 350 tons. 11 kts. Guns: **2**—4 inch.

KUSNETSCHICHA (1910). 105 tons. 10 kts.

AZIZ BEKOV (ex-*Astrabad* 1900). 325 tons. Guns: **5**—3 pdr. H.P. 500 = 11 kts.

TRUD (ex-*Geok Tepe*, 1883). 1000 tons. Guns: **4**—4 pdr. Speed: 11 kts. Employed as Station Ship.

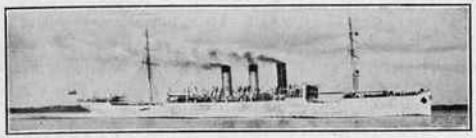


1924 *Photo, Abrahams, Devonport.*

VOROVSKY (ex-*Yaroslavna*, ex-yacht *Lysistrata*, built by Denny, Dumbarton, 1900). 2089 tons (yacht measurement), 1900 tons (registered). Dimensions: 285 (*p.p.*), 319 (*o.a.*) × 40 × 18 feet. Engines: Triple expansion. 2 screws. H.P. 3500 = 18 kts. Guns: 2–4·7 inch., 2—3 pdr., 2 M.G. Complement: 127. (In Far East.)

TRAINING AND DEPÔT SHIPS.

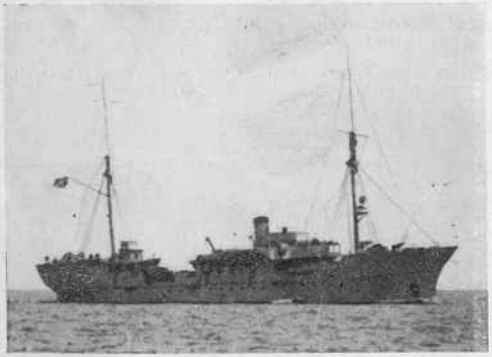
Engineers' Training Ship.



(And Transport.)

KOMSOMOLETZ (ex-*Okean*, Howaldt, 1902). 11,900 tons. Guns: 4—3 pdr. H.P. 11,000=18 kts. Coal: 1600 tons. Boilers: 6 Belleville, 6 Niclausse, 3 Yarrow, 2 Thornycroft. Complement, 700.

Training and Depôt Ships.

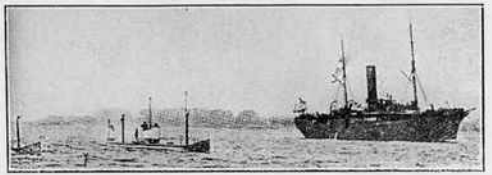


TREVOLEV. 1931 *Photo, Herr T. Hallonblad.*

TREVOLEV (ex-*Voin*, 1893, rebuilt 1930). 1280 tons. Guns: 4—3 inch. Speed, 9 kts. Training and s/m depot ship.

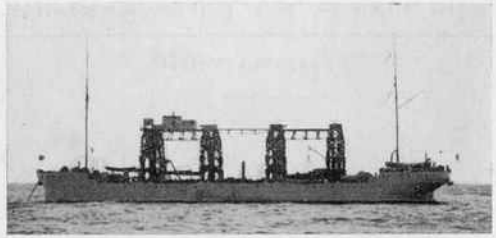
LENINGRADSOVIET (ex-*Vierny*, 1895, rebuilt 1926). Similar to *Trevolev* in main features. Training Ship for cadets.

Submarine Depôt Ships.



KHABAROVSK (1895). 2830 tons. H.P. 1800=12·5 kts. Guns: 2—11 pdr., 2—3 pdr., 2 M.G. Coal: 390 tons. Complement, 132. (Present best speed is 10 kts.)

SMOLNY (ex-*Tosno*) (Hull, 1907). 3200 tons. Dimensions: 318 × 41 × 18 feet. H.P. 1,200=13 kts. (only good for 10 kts. now). Guns: 4—3 pdr. Coal: 390 tons.



1931 *Photo.*

KOMMUNA (ex-*Volkhov*, Putilov, 1913). 2400 tons. Dimensions: 315 × 69 × 11¾ feet. Diesel engines. H.P. 1200 = 10 kts. Radius 3600 miles. Can raise 1000 tons.

Note.—Carries all essential stores for submarines (oil fuel, reserve accumulators, &c.), and has compressed air, distilling and charging plant, workshops, &c.

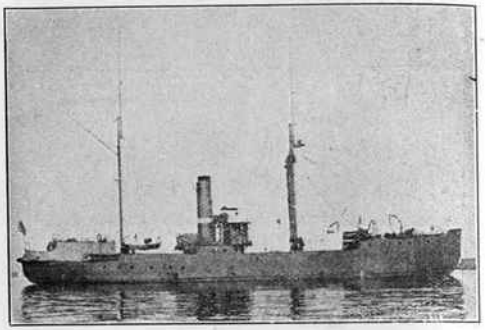
SOVIETSKAYA ROSSIA (ex-*Beresan*). 5096 tons. H.P. 2700.

Depôt Ships.

KRASNII-KOUBANETZ (ex-*Koubanetz*, 1887). 1295 tons. Sister to *Znamya Sozialisma*.

KRASNII-KOMANDIR (ex-*General Broussilov*).

Repair Ships.



KRASNII GORN (ex-*Kama*, 1911). 1982 tons. Dimensions: 237¾ × 36 × 12 feet. I.H.P. 1250 = 10 kts. Coal: 170 tons.

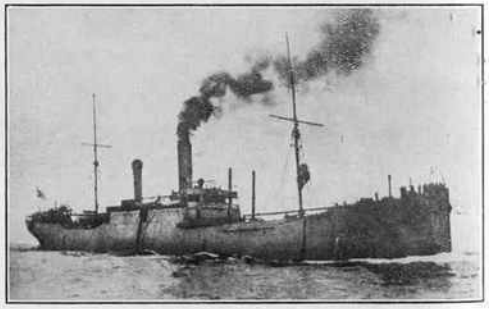


Photo added 1929.

SERP-I-MOLOT (Clydebank, 1898). 11,700 tons. Dimensions: 508×58¼×24 feet. Guns: not known. H.P. 12,500=20 kts. Coal: 800 tons.

Transport.

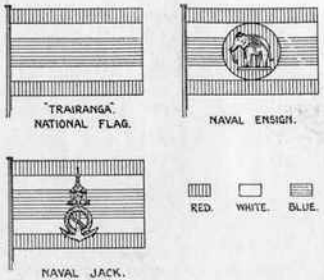
(Appearance as *Krasnii Gorn.*)

KRASNII LENINGRAD (ex-*Sukhona*, 1911). 1982 tons. Dimensions: 237¾ × 36 × 12 feet. I.H.P. 1250 = 10 kts. Coal: 170 tons.

ROYAL SIAMESE NAVY.

Revised **1932** by Courtesy of the Chief of the Naval Staff.

Flags.



ADMIRAL OF THE FLEET'S FLAG.—A blue flag with a white elephant, and in the upper canton next the staff two yellow anchors crossed surmounted by the Siamese crown.

ADMIRAL'S FLAG.—A blue flag with a white elephant in the centre.

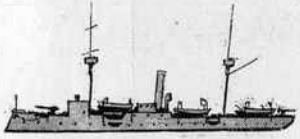
VICE ADMIRAL'S FLAG.—The same as the Admiral's flag but with a white "Chakra" in the upper canton next the staff.

REAR ADMIRAL'S FLAG.—The same as the Admiral's flag but with two white "Chakras" near the staff.

Personnel: 4726. Officers: 352.

SUKHODAYA. RATANAKOSINDRA.

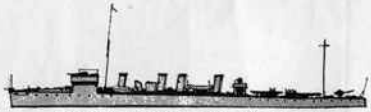
CHOW PHRAYA.



BALI, SUGRIB, MONGKUT.

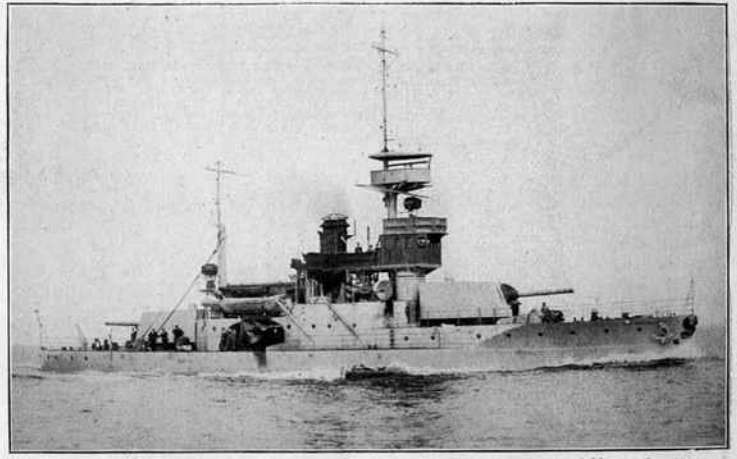
T.B. 1, 2, 3, 4

PHRA RUANG.



SUA TAYARNCHOL No. 4th funnel.
SUA KHAMRONSINDHU.

SUKHODAYA. 1930 *Photo, by courtesy of Messrs. Vickers-Armstrong.*



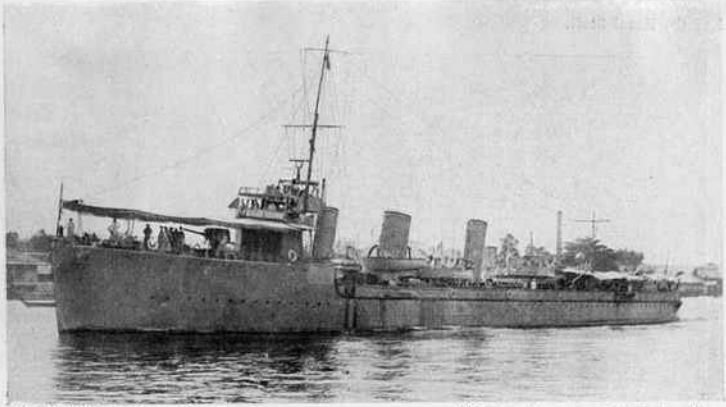
1926 *Photo, by courtesy of Messrs. Armstrong.*

SUKHODAYA (Vickers Armstrong, Nov. 19, 1929).

RATANAKOSINDRA (Armstrong, April 21, 1925). 1000 tons. 160 (*p.p.*), 175 (*o.a.*) × 37 × 10¾ feet. Guns: 2—6 inch, 4—3 inch AA. Protection: Side 2½″ (amidships), 1¼″ ends, nickel steel. Barbette rings, 2½″ nickel steel. C.T. 4¾″ cast steel armour. Upper deck, ¾″ to 1½″ high tensile steel. 2 screws. Vertical triple expansion engines. H.P. 850 = 12 kts. 2 oil-burning water-tube boilers. Oil: 96 tons. Complement, 103.

Ratanakosindra laid down 29th Sept., 1924, and completed August, 1925. *Sukhodaya* completed 1930.

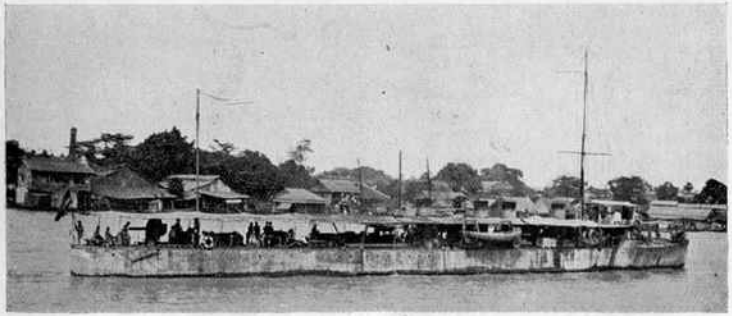
3 Destroyers.



PHRA RUANG. 1921 *Photo, by courtesy of J. Bailey, Esq.*

PHRA RUANG

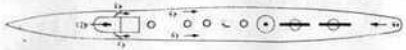
Phra Ruang (ex-British *Radiant*, launched by Thornycrofts, Nov., 1917. Purchased by Siam, July, 1920). 1035 tons. Dimensions: 274 (*o.a.*), 265 (*p.p.*) × 27½ × 11 feet (*max.* draught) and 8½ feet (*mean*). Guns: **3**—4 inch, **1**—3 inch AA., **1**—2 pdr. **1** M.G. Tubes: **4**—21 inch, in two twin deck mountings. Machinery: Brown-Curtis (all geared) turbines. Designed S.H.P. 29,000 = 35 kts. (39,67 trials). 3 Yarrow boilers. Oil fuel: *about* 285 tons *max.* Complement, 100.



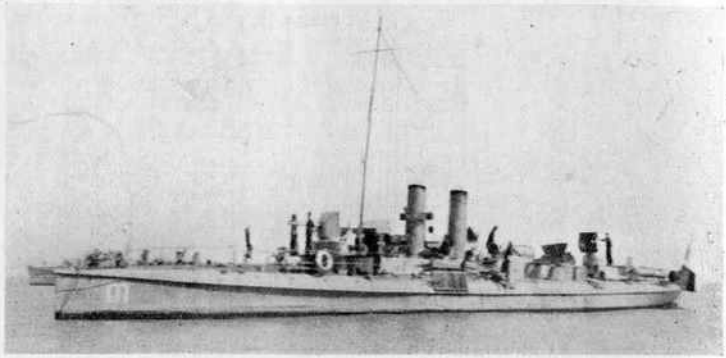
1919 *Photo, J. Bailey, Esq.*

Sua-Khamronsindhu (1912), 385 tons, and ***Sua-Tayarnchol*** (1908), 375 tons. Both built by Kawasaki Co. Kobé, Japan. Dimensions: 227 (*p.p.*) × 21½ × 6 feet. H.P. 6000=27 kts. Oil: 75 tons=850 miles at 11 kts. Armament: **1**—12 pdr., **5**—6 pdr., **2** M.G.; **2**—18 inch tubes. Complement: 71.

Notes.—Same type as the Japanese "*Arare*" class Destroyers. *Sua-Tayarnchol* has only three funnels.



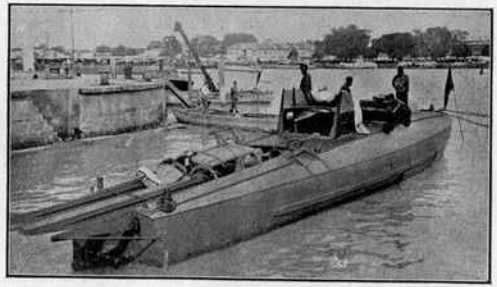
4 Torpedo Boats.



No. 3. 1932 *Photo, Official.*

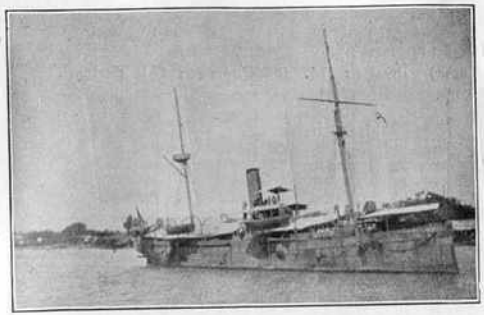
4 *Kawasaki* boats:—No. ***1, 2*** and ***3*** (1908), and No. ***4*** (1913), 120 tons. 131·6 × 16·2 × 3·6 feet. H.P. 1200=22 kts. Armament: **1**—6 pdr., **1**—3 pdr., **2**—18 inch tubes. Complement: 24.

C. M. B.

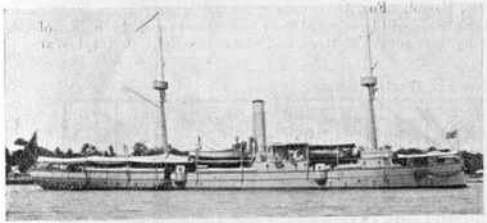


C.M.B. 1925 *Photo, by courtesy of Messrs. Thornycroft.*

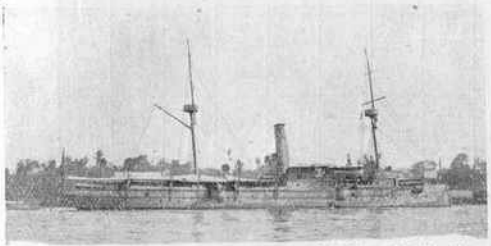
Five 55-ft. type, (1922) Thornycroft type, 11 tons. B.H.P. 750=37 kts. (40 kts. *extreme*). Petrol carried: 300 gallons *normal*, 500 *max.* **4** Lewis guns, **2** torpedoes, **2** D.C. Complement, 5.



MCNGKUT RAJAKUMARN (ex-*Filipinas*, Hongkong and Whampoa Dock Co., 1887; purchased 1891). 700 tons. 175×23½×11 feet. Guns: 2—4·7 inch, 2—6 pdr., 3—3 pdr. Speed 11 kts. 2 screws. Complement: 100. In reserve.



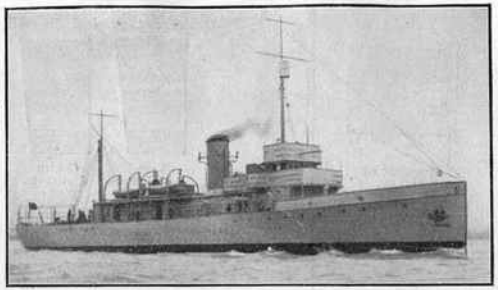
SUGRIB. 1932 *Photo, Official.*



BALI. 1921 *Photo, J. Bailey, Esq.*

BALI (1901), **SUGRIB** (1901). 580 tons. 162×23×10 feet. Guns: 1—4·7 inch, 5—6 pdr. Designed H.P. 500=11·4 kts. Complement, 75.

Training Ship.



CHOW PHRAYA. 1924 *Photo, by courtesy of Messrs. Thornycroft.*

CHOW PHRAYA (ex-British Twin Screw Minesweeper *Havant*, built by Eltringhams, S. Shields, Nov., 1918, purchased 1923 and reconstructed by Messrs. Thornycroft). Displacement, 840 tons. Dimensions: 220 × 28½ × 7½ feet. Machinery: Vertical triple expansion. Boilers: Yarrow, converted to burn oil. I.H.P. 2200 = 16 kts. Oil: 160 tons. Complement, 65.

Despatch Vessel.

PI-SUA-NAM. Displacement 165 tons Dimensions: 100×20×8½ (*mean* draught) feet. H.P. 210=9½ kts. Complement, 25.

Transports.

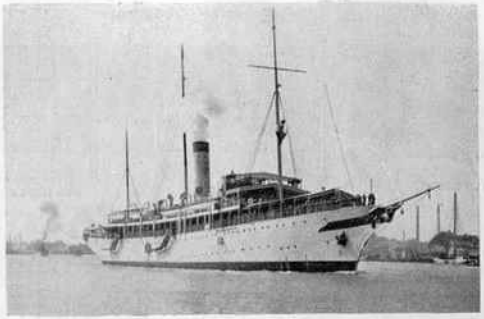
1921 Photo, J. Bailey, Esq.

VIDES* KICHKAR (ex-*Buk*, ex-*Lycidas*, Ritson & Co., Maryport, 1902). 850 tons. 176×27¾×10½ feet. H.P. 780=9 to 10 kts.

* Usually known by first name only.

PRA-YOM. Displacement 190 tons. Dimensions: 110×18×8 (*mean* draught) feet. H.P. 225=10 kts. Complement, 30.

Royal Yacht.



1919 Photo, J. Bailey, Esq.

MAHA CHAKRI (Kawasaki Co., Kobé, Japan, 1918). About 2,400 tons *gross*. Complement, 199. Length, 298 feet (*w.l.*), 335 feet (*o.a.*). Beam, 40 feet. Draught, feet. Guns: Not known. Machinery (*see Notes*): 2 sets triple exp. Boilers: 4 (type unknown) coal and oil burning. I.H.P. about 2000=15 kts. Oil fuel: 200 tons=2000 miles endurance. 2 screws.

Notes.—The hull of the old Royal Yacht *Maha Chakri* was sold to the Kawasaki Co. in 1917, but the engines and other fittings were removed, overhauled and renovated for installation in the new *Maha Chakri* described above.

Coastguard Vessel.

1921 Photo, J. Bailey, Esq.

SRIYA* MONTHON (Thornycroft, 1908). Displacement: 225 tons. Dimensions: 137 (*p.p.*) × 18 × 6½ (*mean* draught) feet. Guns: 2—6 pdr. I.H.P. 700=14·5 knots speed. Coal: 66 tons. No. of Screws: 2. Boilers: 1 (type unknown). Complement, 34.

* Usually known by first name only.

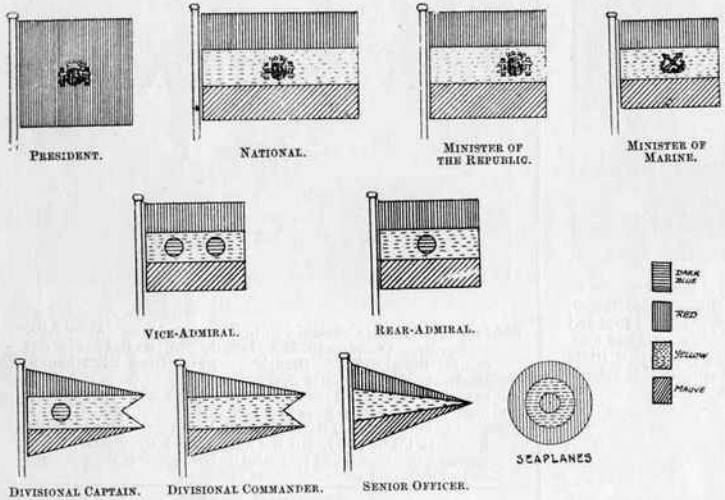
Also 3 ex-N.D.L. steam lighters, re-named *Chon Thale*, *Han Thale*, *Leu Thale*, built by Hongkong and Whampoa Dock Co. About 160×27× feet, 440 tons *gross*. *Nom.* H.P. 60=8 kts. speed. Seized during the war and now used for various purposes, including occasional surveying duties.

There are various small craft used for River Duties of which no precise details are available.

SPANISH NAVY.

Revised 1933 by courtesy of the Ministry of Marine.

I—Flags.



II—Administration.

Minister of Marine—Sr. Dn. José Giral Pereira.
Naval Attaché, (London)—Capitan de Navio, Dn. Adolfo H. de Solás.

III—Fleet Organisation.

No exact details available: is reported to vary according to the season of the year. The latest statement available is as follows:—

(*a*) "In 3rd Condition" (*i.e.* fully manned):—Training Squadron, *Jaime I*, 5 Cruisers and 10 destroyers, of *Alsedo* class and 7 *Churruca* class.

(*b*) *Juan Sebastian de Elcano* on Foreign Cruises, for Training Duties.

(*c*) For service on African Coast and in territorial waters, &c.:—
1 gunboat, 6 patrol vessels, 1 tug, and sundry small craft.

IV—Personnel.

Officers 1729 (including Departmental Corps). Reserve: 374. 14,000 seamen; 2813 marines.

Vice-Almirante. *Vice-Admiral*	Contra Almirante. *Rear-Admiral.*	Capitán de Navio *Captain.*	Capitán de Fragata. *Commander.*	Capitán de Corbeta. *Lieutenant-Commander.*	Teniente de Navio. *Lieutenant.*	Alferez de Navio. *Sub-Lieutenant.*

Other branches, *without a star*, have distinguishing colours as follows:—

Engineers	...	*green.*	Astronomical	...	*green brown.*
Constructors	...	*blue.*	Pharmaciens	...	*yellow.*
Doctors	...	*red.*			
Paymasters	...	*white.*			

V—Training Establishments.

For Training Squadron and Division, &c., v.§ III (*a*) (*b*) (*c*).

Shore Establishments are:—For Executive Officers, Naval School (*Escuela Naval Militar*), San Fernando. For Engineering Branch and Cadets, Ferrol. For Accountant Officers, Cartagena.

In future, naval constructors and gunnery officers will be selected from executive branch by means of special courses. In order that officers may extend their studies in these and other directions, a Naval War College has been established in Madrid.

VI. Naval Ordnance.

Notation.	Nominal Calibre.		Model.	Length in calibres	Weight of Gun.	Weight of A.P. shell.	Initial velocity	*Max.*-penetration A.P. capped direct impact at K.C. at		Danger Space against average ship, at			Rounds per minute.
								5000 yards.	3000 yards.	10,000 yards.	5000 yards.	3000 yards.	
HEAVY	c/m.	inches.			tons.	lbs.	ft. secs.	inches.	inches.				
	30·5	12	V'09	50	66	850	3010	17	20	...	...	...	2
	20·3	8	V	50	15	256	3000	...	...	...	...	...	6
MEDIUM	*15*	6	*V.	50	7¾	100	3100	...	8¾	...	...	...	10
LIGHT	12	4·7	V.	45	3·1	48·5	2788	...	...	...	...	...	12
	10·2	4	V.	50	2·1	31	3030	...	...	...	...	...	15

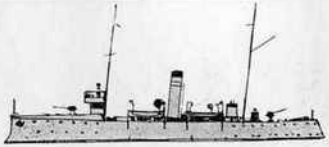
V = Vickers.
* Arsenal de Carraca.

VII. Colour of Ships.

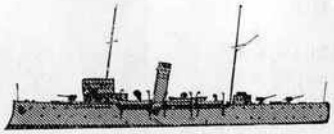
Light grey.

VIII. Mercantile Marine.

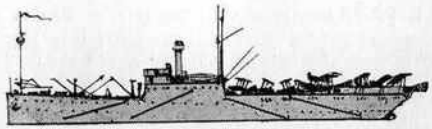
From "Lloyd's Register," 1933 figures. 800 vessels of 1,217,968 gross tonnage.



CANOVAS DEL CASTILLO.
CANALEJAS.
EDUARDO DATO.



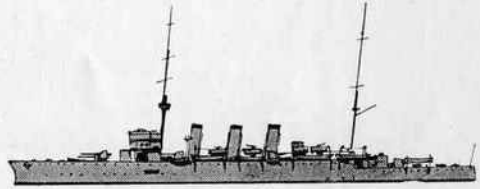
LAURIA. LAYA.



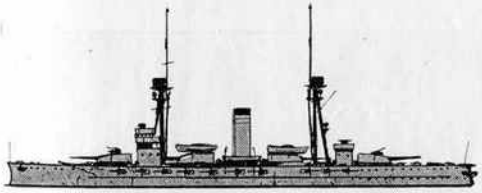
DEDALO.

"UAD LUCAS" AND "ARCILA" *types.*

ALCAZAR. LARACHE. TETUAN.



REPUBLICA.



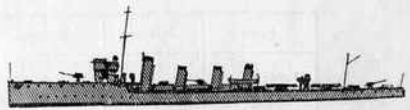
ESPAÑA. JAIME 1.

LIBERTAD.
ALMIRANTE CERVERA.
MIGUEL DE CERVANTES.

MENDEZ NUNEZ.

T.B's.

BARCAIZTEGUI *class*



ALCEDO.
VELASCO.
JUAN LAZAGA.

ESPAÑA (ex-*Alfonso* XIII) (May, 1913), & **JAIME PRIMERO** (Sept., 1914).

Normal displacement, 15,452 tons (*max.* 15,700 tons). Complement, 854.

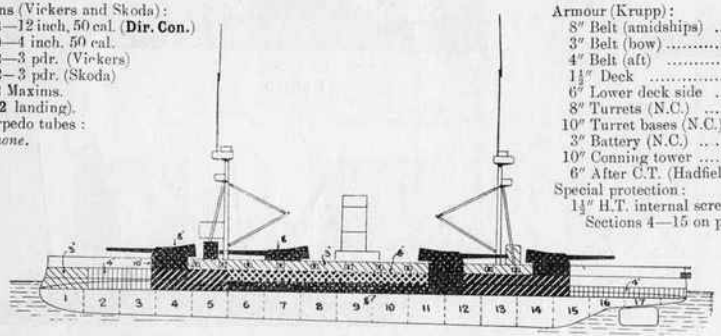
Length (*waterline*), 435 feet. Beam, 78¾ feet. *Max.* draught, 25½ feet. Length (*over all*), 459¼ feet.

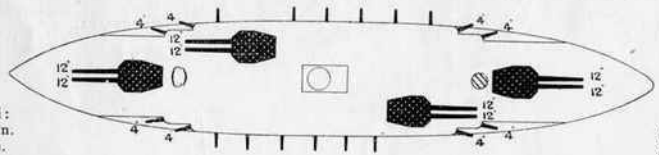
Guns (Vickers and Skoda):
8—12 inch, 50 cal. (**Dir. Con.**)
20—4 inch, 50 cal.
2—3 pdr. (Vickers)
2—3 pdr. (Skoda)
2 Maxims.
(**2** landing).

Torpedo tubes:
none.

Armour (Krupp):
8″ Belt (amidships) .....
3″ Belt (bow) .....
4″ Belt (aft) .....
1½″ Deck .....
6″ Lower deck side .....
8″ Turrets (N.C.) .....
10″ Turret bases (N.C.) ...
3″ Battery (N.C.) .. ..
10″ Conning tower .....
6″ After C.T. (Hadfield)

Special protection:
1½″ H.T. internal screens over Sections 4—15 on plans.





Ahead:
6—12 in.
4—4 in.

Astern:
6—12 in.
4—4 in.

Broadside: **8**—12 in., **10**—4 in.

Machinery: Parsons turbine. 4 screws. Boilers: 12 Yarrow. Designed H.P. 15,500 = 19·5 kts. Coal: *normal* 900 tons; *maximum* 1900 tons + 20 tons oil fuel = nominal radius of 5000 miles at 10 kts., and 3100 miles at 16¾ kts.

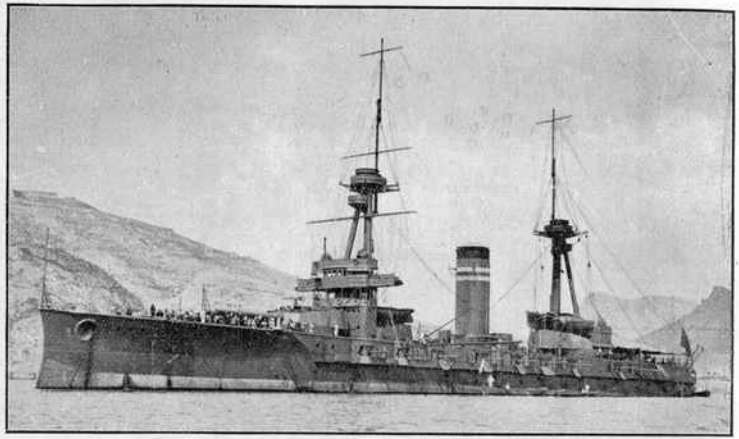
Gunnery Notes.—Vickers type 12 inch gun directors in lower top on each mast. 12 inch manœuvred by hydraulic power; all-round loading at any angle of elevation. Magazine capacity is 80 rounds per 12 inch gun, but there is ample storage for more than this. Arcs of fire: end 12 inch, *about* 270°; echelon 12 inch, 180° on own beam (*nominal*) and about 80° *for* beam. Heights of guns over normal waterline: 12 inch, 24¼ feet; 4 inch, 13¼ feet. Total weight *about* 2550 tons. (These notes are not from any official source.)

Armour Notes.—Main belt is 6 feet 7 inches deep, 4 feet 7 inches of this being below waterline and 2 feet above. On plans 8 inch belt amidships should extend to bases of end barbettes. Hull without armour = 5600 tons.

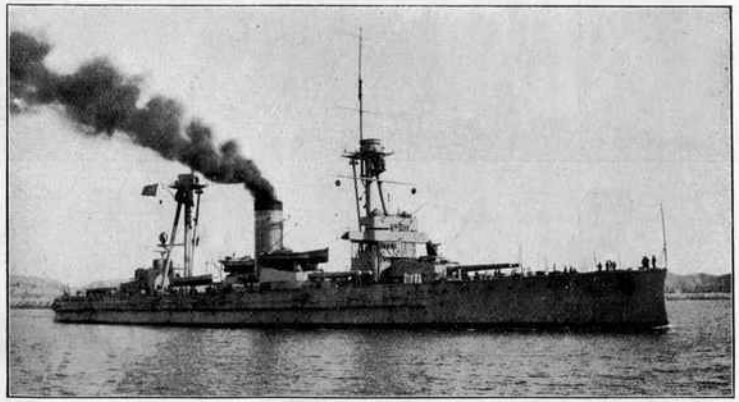
Machinery Notes.—Engines = 1320 tons.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials (Full Power)*	*Boilers*	*Best recent speed*
España	Ferrol Yard	S. E. C. N.	Feb.'10	1915	= 20·36	Yarrow	
Jaime I			Feb.'12	1921	23,357 = 20·028		

General Notes. Built under Navy Law of 7th January, 1908. Construction of *Jaime I* was greatly impeded by delivery of materials from England being stopped during the war up to 1919. A third ship of this type, *España*, wrecked on Riff coast of Morocco, August, 1923, and became a total loss. Both ships to be modernised in armament and fire-control.



JAIME I (two white bands round funnel). 1925 *Photo, Capitan M. Mille.*



ESPAÑA (only one white band round funnel). 1926 *Photo, Capitan M. Mille.*

1st Class Cruisers

(*Cruceros de 1a Clas*).

(Baleares Class—2 Ships.)

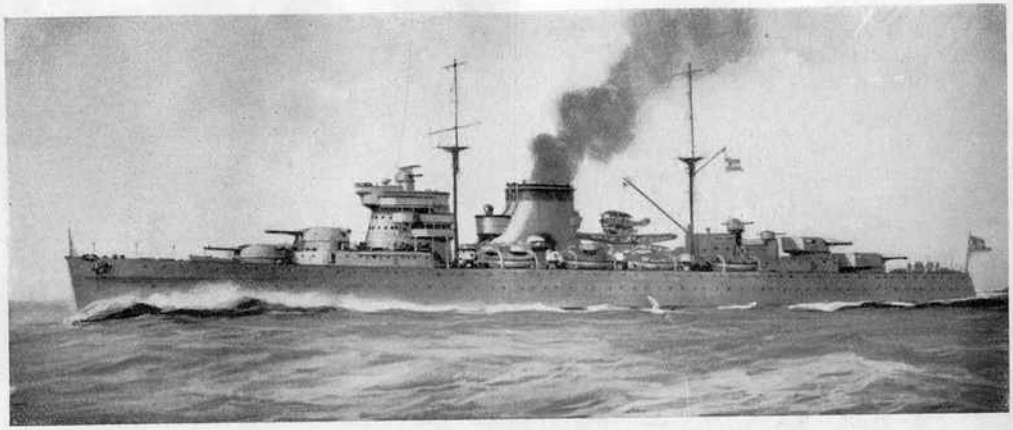
BALEARES (Apl., 1932).
CANARIAS (May 28th, 1931).

Displacement: 10,000 tons *standard* (12,230 tons *full load*). Complement, 765.

Length, 636 feet.

Beam, 64 feet.

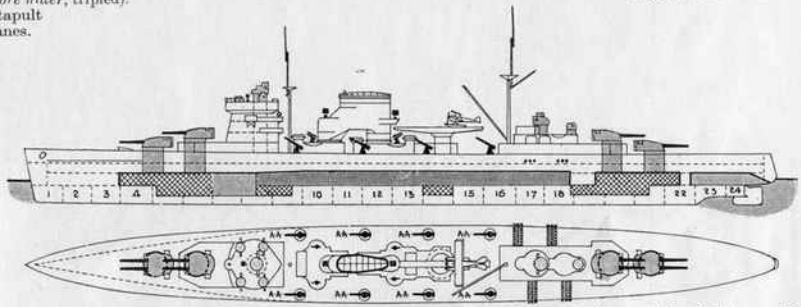
Draught, 17¼ feet (*mean*).



1931 *Illustration.*

Guns:
8—8 inch.
8—4·7 inch AA.
8—2 pdr. pom-pom AA.
Torpedo tubes (21 inch):
12 (*above water*, tripled).
1 catapult
2 planes.

Armour:
Belt 2"—1·5"
Turrets 1"
Magazines 4"



Machinery: Parsons geared turbines. Boilers: 8 Yarrow. Designed S.H.P. 90,000 = 33 kts. Oil = 2,794 tons. Radius: 8000 miles at 15 kts.

Notes.—Both ships laid down at Ferrol August 15th, 1928. *Canarias* is to be completed in 1934.

LIBERTAD (ex-**Principe Alfonso**) (Jan. 3rd, 1925), **ALMIRANTE CERVERA** (Oct. 16th, 1925), and **MIGUEL DE CERVANTES** (May 19th, 1928).

Normal Displacement, 7,850 tons. *Full load, abt.* 9,000 tons.

Length, 575 feet, (*p.p.*) 579½ feet, (*o.a.*) Beam, 54 feet.

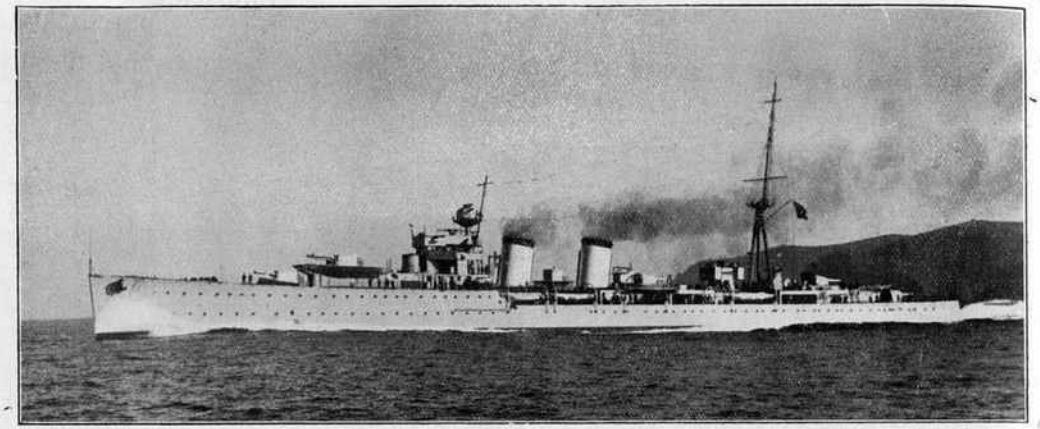
Draught, *mean* 16½ feet, *deep load* ? feet.

Complement, 545.

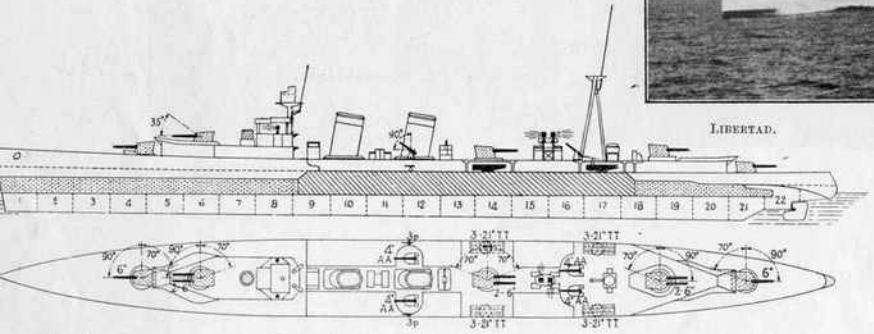
Guns:
8—6 inch, 50 cal. (**Dir. Con.**)
4—4 inch, 45 cal. AA.
2—3 pdrs. AA.
1 Machine.

Tubes:
12—21″ in four triple U.D. rev. mounts.

Armour:
3″ Side (amidships.) .....
2″ Side (forward.) .....
1½″ Side (aft.) .....
1″ Deck. .....
2″ (H.T. ?) over rudder. ? .....
6″ Conning tower. ? .....



LIBERTAD. 1927 *Photo, Capitan Matteo Mille.*



Ahead: **3**—6 in.

Broadside: **8**—6 in., **6**—21 in. T.T.

Astern: **3**—6 in.

Machinery: Parsons Geared Turbines. 4 screws. Boilers: 8 Yarrow (large tube). Designed S.H.P. 80,000 = 33 kts. Fuel capacity: 500 tons oil, *normal*; 1650 tons oil, *maximum*. Endurance: 5000 at 15 kts., 1200 at *full power*.

Name	*Builder*	*Machinery*	*Laid down*	*To be Completed*	*Trials*	*Boilers*
Libertad *Alm. Cervera* *M. de Cervantes*	Ferrol D.Y.	S. E. C. N.	Aug. '22 25 Nov '22 Apr. '26	Dec. '25 May '27 1931	85000 = 34.7.	Yarrow

Notes.—Laid down by S.E.C.N. at Ferrol D.Y., under Navy Law of 17th Feb., 1915. Originally projected that only one Cruiser should be begun, but redistribution of funds has permitted the construction of two more of this type. Cost estimated at about 8122 pesetas a ton.

Designed under direction of late Sir Philip Watts, K.C.B., Director of Sir W. G. Armstrong, Whitworth & Co., Ltd., for Spanish Government. Are practically enlargements of British "C" class, with second, third and fourth gun positions paired.

LIBERTAD. 1929 *Photo, Renard, Kiel.*

Cruiser (*Cruçero Ligero de 2ª Clas*).

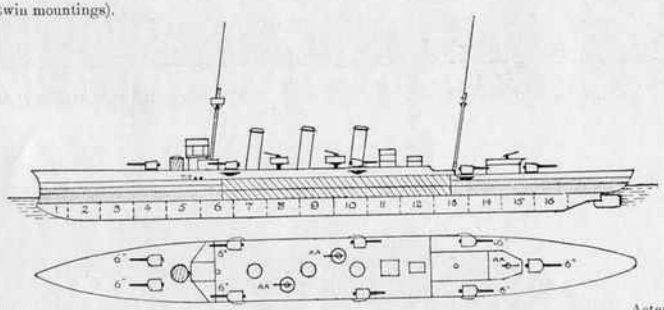
REPUBLICA (ex-**Reina Victoria Eugenia**) (21st April, 1920).

Displacement, 5590 metric tons. Complement, 404.

Length (*p.p.*) 440 feet, (*o.a.*) 462 feet. Beam, 49⅔ feet. *Mean* draught, 15¾ feet.

Guns (Vickers):
9—6 inch, 50 cal.
4—3 pdr. AA.
1—12 pdr. (Field)
4 Machine
Torpedo tubes: (21 inch).
4 *above water* (twin mountings).

Armour (Nickel and H.T.):
3″ Side .....
2½-1½″ Ends .....
3″ Deck .....
6″ Conning tower



Ahead:
4—6 in.

Astern:
3—6 in.

Broadside: **5**—6 in., **1**—21 in. tube.

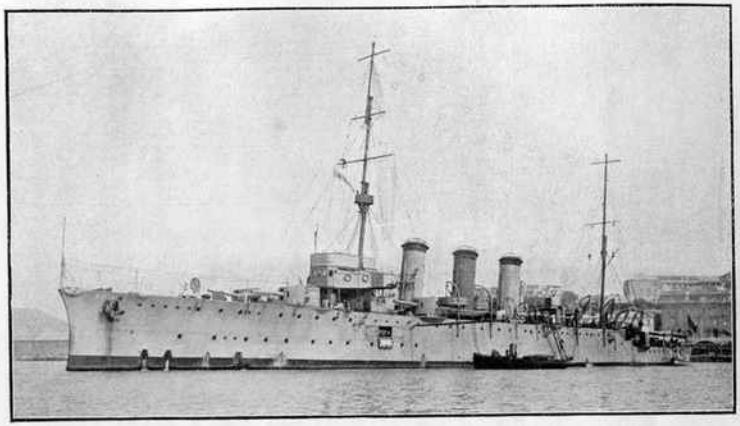
Machinery: Parsons turbines. 2 screws. Boilers: 12 Yarrow (coal and oil burning), in 3 rooms. Designed H.P. 25,500 = 25·5 knots. Coal: *normal* 660 tons (inclusive of oil fuel).

Gunnery Notes.—6 inch are Vickers models, built at La Carraca. Those on Forecastle have 180° arc of training, *i.e.*, 30° inboard and 150° on own beam.

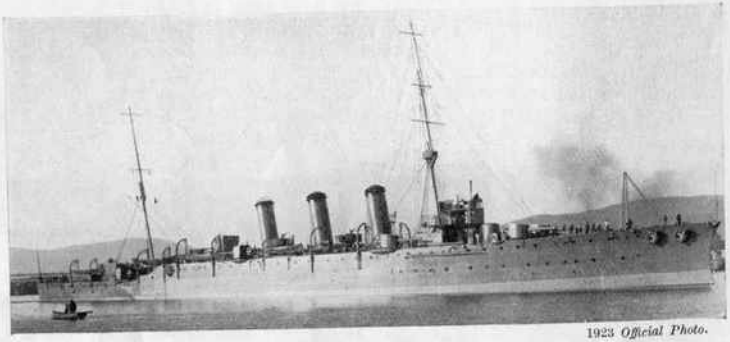
Torpedo Notes—Above water tubes are behind lidded ports on main deck above section numbered 5.

Name	*Builder*	*Machinery*	*Ordered*	*Laid down*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
Republica	Ferrol D.Y.	S. E. C. N.	Aug. '14	Mar. '15	15 Jan., '23	8 hours: 26019 = 25·77 4 hours: 28,387 = 26·9	Yarrow	25·7

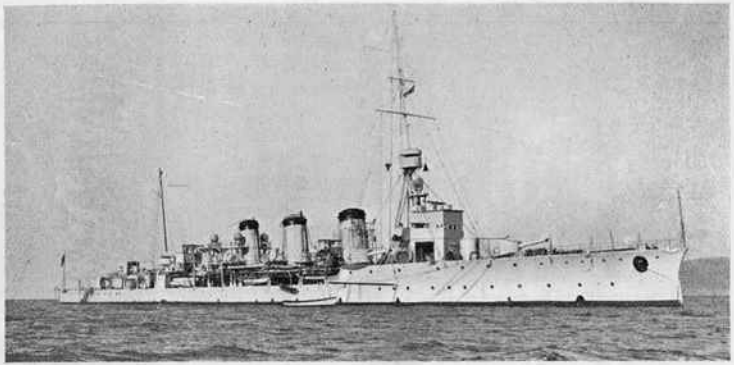
General Notes.—Built under Navy Law of 30th July, 1914.



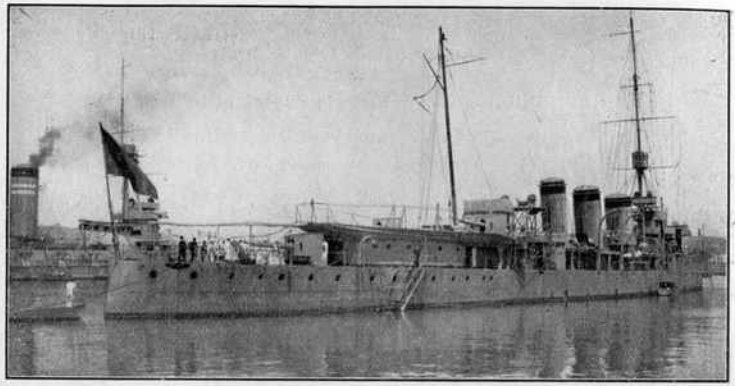
1925 *Photo, Capitan M. Mille.*



1923 *Official Photo.*



Tripod and s.l. on funnel: 1932 *Photo, Capitan M. Mille.*



1925 *Photo, Capitan M. Mille.*

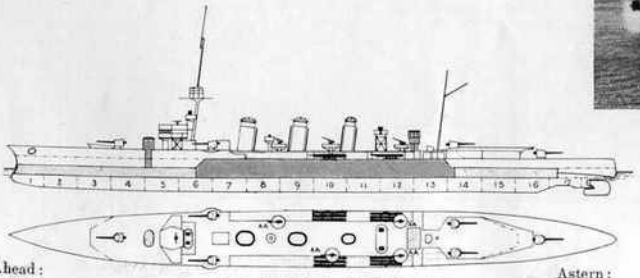
MENDEZ NUNEZ (3rd March, 1923).

Normal Displacement: 4725 *metric* tons. Complement, 343.

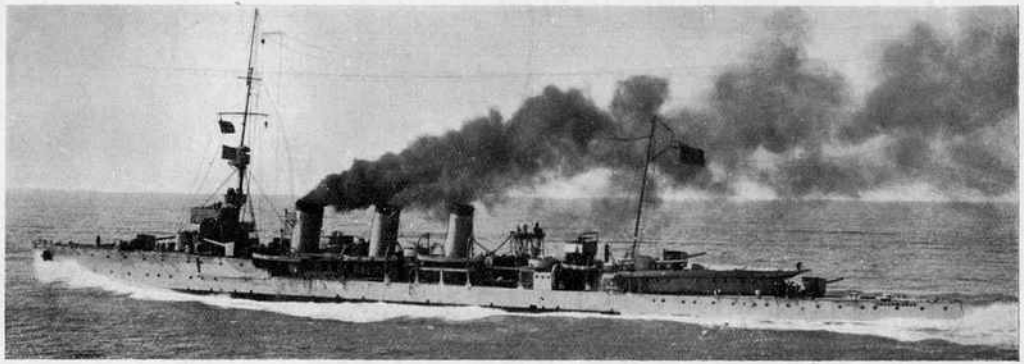
Length, (*p.p.*) 440 feet, (*o.a.*) 462 feet. Beam, 46 feet. Draught, 14¼ feet *mean*.

Guns:
6—6 inch, 50 cal. **Dir. Con.**
4—3 pdr. AA.
4 machine.
(**1**—12 pdr. landing.)
Torpedo Tubes (21 inch):
12 *above water* (triple mountings).

Armour:
3″ Side amidships .....
2½-1¼″ Side (ends) .....
1″ Deck .....
6″ C.T. .....
″ Director tower .....



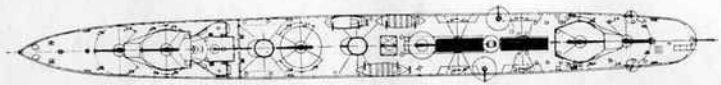
Ahead: **3**—6 in. Broadside: **4**—6 inch, **6**—21 inch tubes. Astern: **3**—6 in.

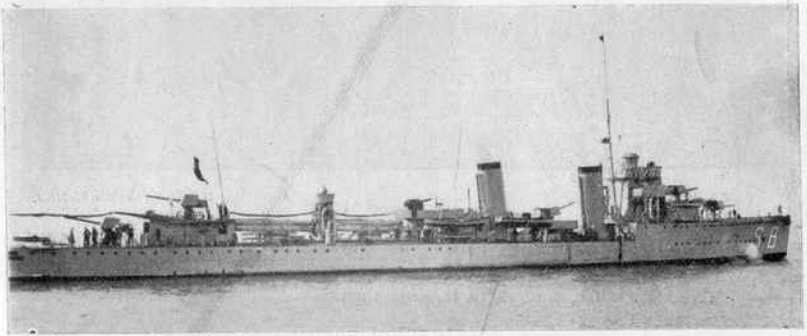


1930 *Photo, C. de C. Mateo de Mille, R.S.N.*

Machinery: Parsons (geared) turbines. 4 screws. Boilers: 12 Yarrow (6 oil burning, 6 mixed firing). Designed H.P. 45,000 = 29 kts. Coal: *normal*, 250 tons; *maximum*, 787 tons + 492 tons oil. Radius: 5000 miles at 13 kts. *Blas de Lezo* wrecked July 11, 1932.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*
M. Nuñez	Ferrol D.Y.	S. E. C. N.	28 Sept.'17	1924	43,776 = 29.28	Yarrow





SANCHEZ BARCAIZTEGUI

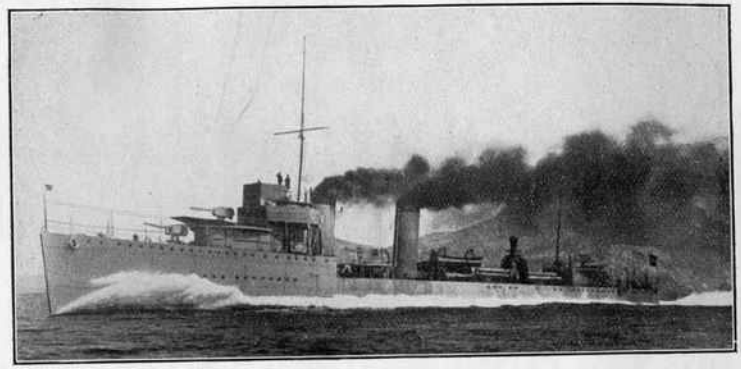
1931 *Photo.*

Displacement: 1,650 tons *normal*, 1,800 tons *full load*. Dimensions: 320 × 31¾ × 10½ feet. Designed H.P. 42,000 = 36 kts. Two sets Parsons turbines. Guns: **5**—4·7″, **4** M.G., **1**—14 pdr. AA. Torpedo tubes: **6**—21 inch tripled. **2** D.C. carried. Oil: 540 tons. Radius: 4,500 miles at 14 kts.

Note.—Built under 1915 Programme. Design generally similar to British Leaders of *Scott* class. Former *Churruca* and *Alcala Galiano*, of this type, were sold to Argentine Navy, 1927. New vessels bearing these names were laid down in 1929. The last seven differ from the rest, having Tripod rig and a new form of bridge-work.

17 Flotilla Leaders and Destroyers

Flotilla Leaders.

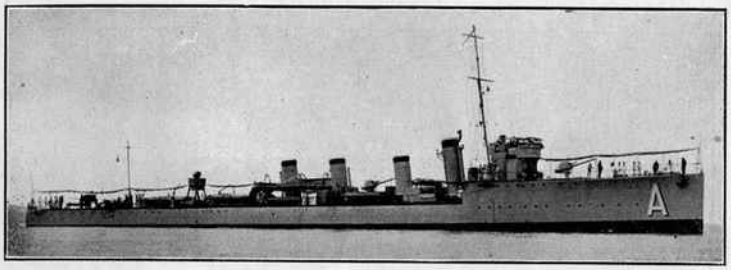


1926 *Photo, by courtesy of the Ministry of Marine.*

14 **CHURRUCA** class. All built at Cartagena D.Y. (S.E.C.N.).

	Bow Initials.
SANCHEZ BARCAIZTEGUI 1926.	SB
ALMIRANTE JUAN FERRANDIZ (May 21, 1928) ..	AF
JOSÉ LUIS DIEZ (August 25, 1928)	JD
LEPANTO (November 7, 1928)	LP
ALCALÁ GALIANO (April 12, 1930)	AG
CHURRUCA ( )	CH
ALMIRANTE VALDÉS (September 8, 1930)	AV
ALMIRANTE ANTEQUERA (December 29, 1930) ..	AA
ALMIRANTE MIRANDA ( )	AM
GRAVINA	
ESCAÑO	
ULLOA	
JORGE JUAN	
JAIME JANER	

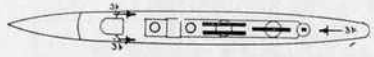
3 Alsedo Class



ALSEDO. 1928 *Photo, Abrahams & Sons, Devonport.*

3 *Alsedo* class: ***Alsedo*** (26th Oct., 1922), ***Velasco*** (1923), ***Juan Lazaga*** (March, 1924). All built at Cartagena. Displacement: 1145 tons (*normal*) 1325 tons (*full load*). Dimensions: 275 × 27 × 10¼ feet. (*max.*) Parsons geared turbines and 4 Yarrow boilers. Designed H.P. 33,000 = 34 kts. (36 kts. reached on trials.) Fuel 265 tons oil only. Radius: 2500 miles at 15 kts. Guns: **3**—4 inch (40 cal.), **2**—2 pdr. anti-aircraft. Torpedo tubes: 4—21 inch in 2 twin deck mountings.

Notes.—Provided under Law of 1915. First of class laid down about June, 1920. Design resembles British *Nimrod* type.



12 Torpedo Boats

(*Torpederos*).

No. 11 1931 *Photo, Capitan M. Mille.*

▲ "12 *Vickers-Normand*." **2** (1911), **3** (1912), **7**, (1914), **9**, **14** (1915), **16** (1916), **17**, **18**, **19**, **20**, (1918), **21**, **22** (1919) 177 tons. Dimensions: 164 × 16½ × 4½ feet (*max.* draught). Armament: **3**—3 pdr., **3**—18 in. tubes, (twin amidships and single aft. H.P. 3750=26 kts. Parsons turbines and Normand boilers. Coal: 73 tons. 3 screws (Nos. 1–7). 2 screws (Nos. 8–22. Complement, 31. 24 boats sanctioned under Law of the 7th January, 1908, but Nos. 23 and 24 were abandoned 1919. No. 22 completed 1921. All are fitted for minelaying. **Nos. 1, 4, 5, 11, scrapped 1931, 6, 8, 10, 12, 13, 15, scrapped 1932.**

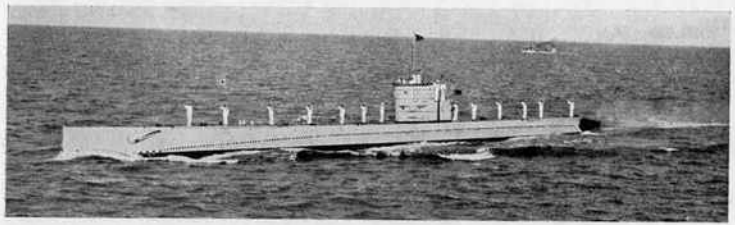
C. M. B.

1 boat. *Thornycroft* 40 feet type (1922). 1 V/12, 250 B.H.P. motor = 30 kts. No armament. Used as a Vedette boat. Complement, 3.

13 + 1 (*building*) Submarines (*Submarinos.*)

Building

1 experimental Admiralty Type ***D 1,*** laid down at Cartagena, 1933. Displacement: 1,050/1,375 tons. Dimensions: 275·6 × 21·8 × — feet. H.P. 5,000/1,350 = 20·5/9·5 kts. Tubes: 6—21". Guns: 1—120 m/m., 4 pom-pom. Built to dive 100 metres.

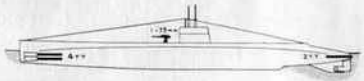


C 1.

1933 *Photo, Capitan Mateo Mille.*

6 *Holland* type, built at Cartagena: ***C1*** (1925), ***C2*** (1926), ***C3*** (1927), ***C4*** (1927), ***C5*** (1928), ***C6*** (1928). Displacement: 915 tons *on surface*, 1290 tons *submerged*. Dimensions: *about* 247 × 20¾ × 13½ feet. Machinery: 2 sets 8-cylinder Nelseco Diesel engines. Speed: 16 kts. (*surface*), 8½ kts. (*submerged*). Guns: 1—75 mm. AA. Torpedo tubes: 6—21 inch (4 bow, 2 stern). Diving limit, 45 fathoms, (reached by *C1*, on trials in 1928).

Note:—About Sept. 1930 *C1* was named "ISAAC PERAL". The number is to be retained.



1933 *Photo, Capitan M. Mille.*

6 *Holland* type: ***B1*** (1921), ***B2*** (1922), ***B3*** (1922), ***B4*** (1922), ***B5*** (1923), ***B6*** (1923). Begun at Cartagena, July, 1916. Are an improved and enlarged *Isaac Peral* type. Displacements: 556 tons *on surface*, 836 tons *submerged*. Dimensions about 205 × 17·9 × 11½ feet. Machinery: *on surface*, 2 sets 8-cyl. Nelseco Diesel engines, totalling 1400 B.H.P. = 16 kts.; *when submerged* electric motors and batteries of 850 H.P. = 10-10½ kts. Trial results for class averaged $\frac{16.8}{10.7}$ kts. Guns: 1—3 inch. Torpedo tubes: 4—18 inch. Provided for by Law of 17th February, 1915. Compl. 28.

Note.—*B6* was submerged for 72 hours without inconvenience during experiments.

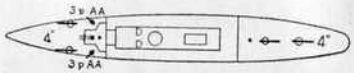
MONTURIOL (A1).

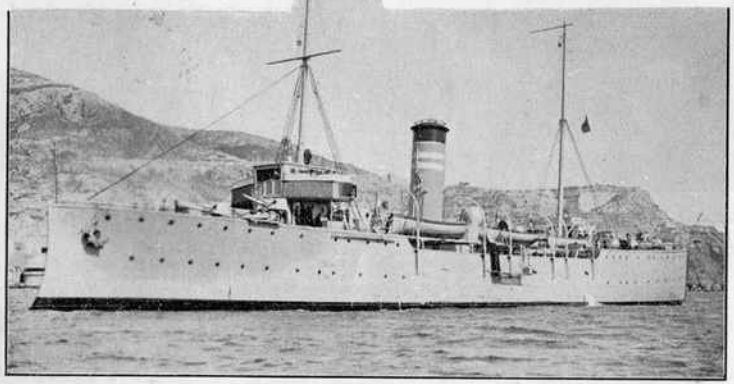
Photo (1919), *Capitan M. Mille.*

1 *Laurenti-Fiat* type: ***Narciso Monturiol (A1),*** built by Fiat San Giorgio Co., Spezia, 1915-17. Displacement: 260 tons *on surface*, 382 tons *submerged*. Dimensions: 149·6 × 13·8 × 10·2 feet. Machinery: *on surface*, 2 sets of 300 H.P. 6-cylinder, 2-cycle Fiat Diesel engines = 600 H.P.; when *submerged*, 2 electric motors of 225 H.P. + batteries = 450 H.P. Maximum speeds: 13 kts. *on surface*, and 8½ kts. *submerged*. Radii of action: *on surface*, 650 miles at full speed and 1600 miles at 8½ kts.; when *submerged*, 18 miles at 8 kts and 85 miles at 4 kts. Torpedo tubes: 2—18 inch in bows. Complement: 18. Built under Law of 17th February, 1915.

Note: This boat is internally sub-divided into 8 w.t.c. Maximum diving depth 130 feet (about 22 fathoms). Detachable lead keel, weighs 9½ tons. Fitted with telephone buoy, Fessenden submarine signalling and receiving apparatus, and Marconi W/T. For rescue and salvage work there are 6 lifting rings outside hull, and 3 escape hatches within hull, for crew. 2 Periscopes about 3½ inches diameter.

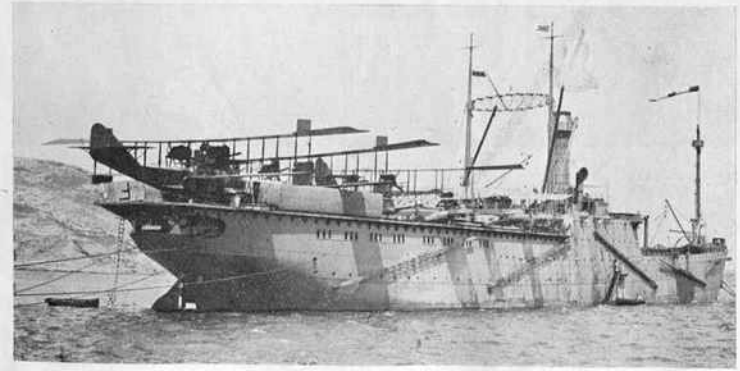
1st Class Gunboats.
(Cañoneros de 1ª Clase).





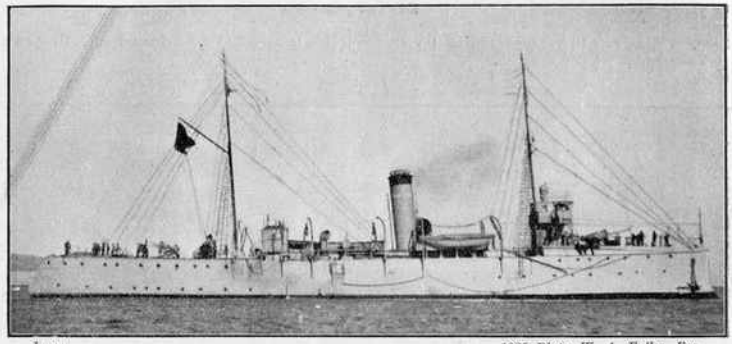
E. Dato. 1925 *Photo, Capitan M. Mille.*

ANTONIO CANOVAS DEL CASTILLO (21st Jan., 1922), **JOSÉ CANALEJAS** (1st Dec ,1922), **EDUARDO DATO** (1923). Built by S.E.C.N., at Cartagena. Displacement, 1335 tons. Complement, 132. Dimensions: 236·3 (*p.p.*) 253·6 (*o.a.*) ×33·9×11·2 feet. Guns: 4—4 inch, 2—3 pdr., AA., 2 pom-poms (for landing). No T.T. or armour. Machinery: 2 sets, triple exp. Boilers: 2 Yarrow. Designed I.H.P. 1700. Speed, 18 kts. Fuel: 324 tons coal or oil = 6500 miles at 10·5 kts. Provided for by Law of 17th February, 1915, and ordered January, 1920. *C. de Castillo* and *J. Canalejas* completed 1923, *E. Dato* completed 1924. Differentiated by number of funnel bands.



Dedalo.

1st Class Gunboats—*continued.*



Laya. 1925 *Photo, W. A. Fuller, Esq.*

LAURIA (1912), **LAYA** (1910). 800 tons. 811 tons. Complement, 126—129. Dimensions: 213½×30×9½ feet (*max.*) draught. Guns: 4—14 pdr. 2 machine. Designed H.P. 1100=14 kts. Made 13·8 to 14·6 kts. on trial. Yarrow boilers. Coal: 148 tons. Radius, 3000 at 10 kts. Built under Navy Law of 7th Jan., 1908, at Cartagena.

Aircraft Carrier.

(Estacion Transportable de Aeronautica Naval.)

1925 *Photo, Capitan M. Mille.*

DÉDALO (ex-*Neuenfels*), built by Swan Hunters, 1901; afterwards *España No. 6*. Transformed 1922. 10800 tons. Dimensions: 420 × 55 × 20¼ feet. Engines: Quadruple expansion. 3 S.E. boilers. H.P., 3000 = 12½ kts. Guns: 2—4·1 inch, 2—1 pdr. Complement, 324. Coal: 940 tons.

Forward is space for one small airship, 42 metres long (shown in photo attached to mooring mast), and there is a complete hydrogen plant. Aft is the seaplane accommodation, workshops, &c., nominal capacity = 25 planes, 2 dirigibles, and 2 balloons. Observe anti-flare device on funnel top in above photo.

9 Armed Trawlers

(Purchased in England and France, 1922.)

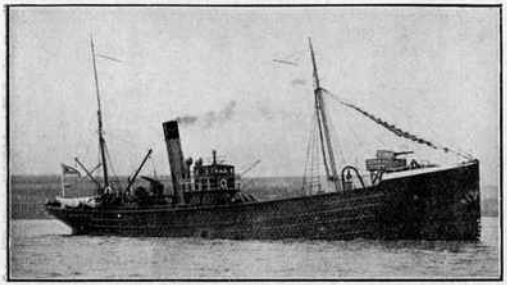
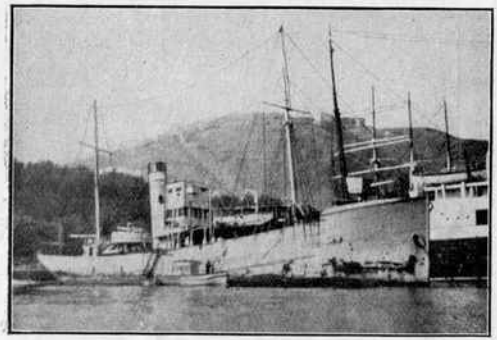


Photo added 1925 by courtesy of Messrs. Cochrane & Sons, Ltd.

2 "*Mersey type*" **ARCILA,** (ex-*William Doak*, Goole S.B. & Rep. Co., 1918), **XAUEN** (ex-*Henry Cramwell*, Lobnitz & Co., 1918). Displacement: 665 tons. (324 tons *gross*). Dimensions: 138½ (*p.p.*), 148 (*o.a.*) × 23¾ × 13½ feet. I.H.P. 550 = 11 kts. Coal: 204 tons.

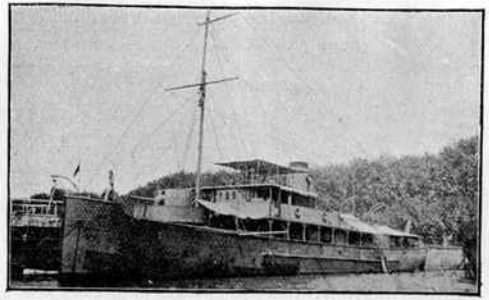
1 *Special type*: **UAD QUERT** (ex-*Rother*, ex-*Anthony Aslett*, Cochrane & Sons, Ltd., Selby, 1917). Displacement about 600 tons (305 tons *gross*). Dimensions: 130 (*p.p.*) × 23½ × 13 feet. I.H.P. 550 = 10.5 kts. Coal: 140 tons.



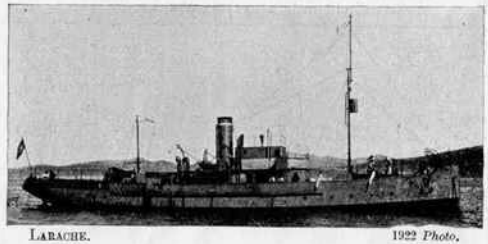
UAD LUCUS type. 1925 *Photo, W. A. Fuller, Esq.*

3 "*Castle type*": **UAD LUCUS** (ex-*Ness*, ex-*Alexander Palmer*, Smith's Dock Co., Ltd. 1917), **UAD MARTIN** ex-*Erne*, ex-*John Chivers*, Bow, McLachlan & Co., 1917), **UAD MULUYA** (ex-*Waveney*, ex-*James Conner*, W. Harkness & Co. Ltd., 1917).

Armed Trawlers—(*continued*).



ALCAZAR. 1925 *Photo, W. A. Fuller, Esq.*



LARACHE. 1922 *Photo.*

3 "*French type*" (builders not reported): **ALCAZAR** (ex-*Rengagé*), **LARACHE** (ex-*Poilu*), **TETUAN** (ex-*Grognard*). 370 tons *gross*. Dimensions: 124 × 22½ × 11 feet. I.H.P. 400 = 10 kts.

Note.—All the above vessels built 1917-18, and understood to be armed with 1—3 inch gun, though some (including *Arcila* and *Xauen*) mount 2.

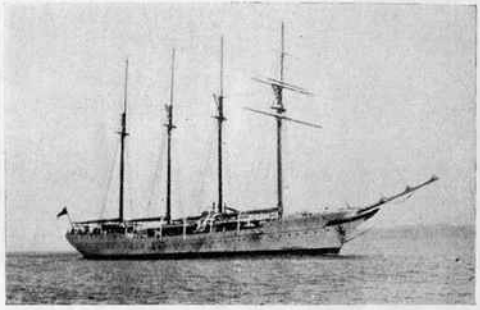
Surveying Vessel. (*Comisión Hidrografica.*)

GIRALDA (Govan 1894, bought 1898) 2450 tons. 300 × 35 × 16½ feet. Guns: 2—6 pdr. (Nordenfelt.). I.H.P. 2000 (*n.d.*), 3500 (*f.d.*) = 20 kts. Coal: 436 tons = 4671 miles at 20 kts. Complement, 147. Refitted 1921, and specially fitted out for oceanographic research.

Surveying Ships—*continued*.

TOLFIÑO (Ferrol, Aug. 21st, 1933.)
1,200 tons. 12 knots.
To carry 1 seaplane.

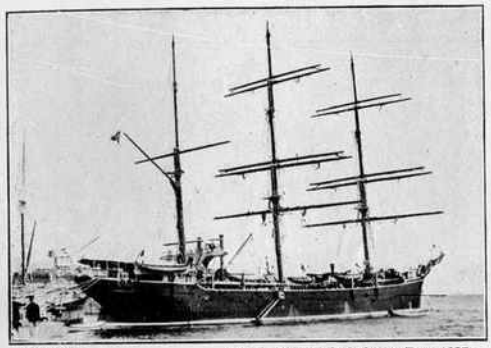
Training Ships.



1931 *Photo.*

JUAN SEBASTIAN DE ELCANO. (Echevarrieta Yard, Cadiz, 5th March, 1927), completed 1928. Four-masted Schooner. Displacement at ¾ load: 3420 tons. Dimensions: 269¼ (*p.p.*) 308½ (*o.a.*) × 43 × 21½ feet (draught at ¾ load). 1 Sulzer Diesel motor of 800 H.P. = 9.5 kts. 1 screw. Oil: 230 tons. Endurance: 10,000 miles at 9.5 kts. Complement, 310 + 80 cadets.

Training Ships—*continued.*



GALATEA. *Photo, Manuel I. Codoner, Esq.*, 1927.

GALATEA (ex-Barque *Clarastella*, 1896). Purchased in Italy, 1922. 2085 tons. 2 auxiliary Diesel motors of 450 h.p. each = 9 kts. T.S. for boys.

Sea-going Tugs. (*Remolcadores.*)

CICLOPE (ex-*St. Clement*, purchased 1922.) Built by Crichton & Co., 1918. Displacement: 800 tons. 136×29×16½ feet. Guns: 1—3 inch. H.P. 1200=12¼ kts. Coal: 240 tons.

GALICIA (ex-*R.5*). Displacement: 350 tons. 100½×21×11 feet. H.P. 550=10 kts. Guns: 1—3 inch.

CARTAGENERO (ex-*H.S. 78*), **FERROLANO** (ex-*H.S. 80*), **GADITANO** (ex-*H.S. 82*). Built by Crichton & Co., South Saltney, Chester, 1918. Displacement: 300 tons. 83½×21½×10½ feet. Guns: 1—6 pdr. H.P., 420=10 kts.

Note.—Above 5 vessels mainly employed in Morocco Coast patrol and examination service.

Submarine Salvage Vessel.

(*Buque para salvamento de submarinos.*)

1921 *Photo, Capitan M. Mille.*

(*Attached to S/M. Station, Cartagena.*)

KANGURO (1917). Double hulled type, with interior docking space. Built by Werf Conrad, Haarlem, Netherlands. 2550 tons. Length, 275·4 feet; beam, 65·4 feet; draught (empty) 14·4 feet; (with submarine docked), 20 feet. Can dock submarine up to 151 feet long. Salvage power: Can raise 650 tons, from 27½ fathoms. H.P. 1000=10 kts. (9·53 trials). Fuel: 150 tons=2448 miles at economical speed. Guns: 4–42 mm.

Transport. (*Transporte.*)

Photo (1919), *Capitan M. Mille.*

ALMIRANTE LOBO (1909). 2545 tons. Guns: 2—5 pdr. Designed H.P. 4300=12 kts. *Nominal* radius, 4540 miles at 10 kts. Complement, 76.

Fleet Oilers.

2 Oilers, each of 6000 tons capacity, built during 1929-32.

Fleet Collier.

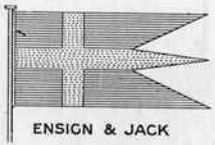
CONTRAMAESTRE CASADO.

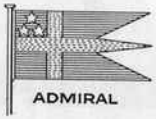
1929 *Photo, Capitan M. Mille.*

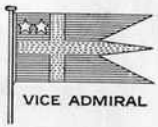
CONTRAMAESTRE CASADO (Armstrong Naval Yard, launched 26th October, 1920). 2042 tons net register. 3282 tons *gross*; 5000 tons *d.w.c.* Dimensions: 320 (*p.p.* and *w.l.*), 332 (*o.a.*) × 45½ × 23 feet. Guns: 4–42 mm. Machinery: 1 set triple exp. Boilers: 3 Cyl. (Howden f.d.). 1 screw. I.H.P. 1950 = 10·5 kts. Own coal: about 310 tons. Complement, 107.

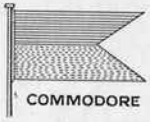
ROYAL SWEDISH NAVY.

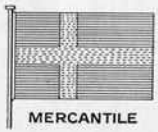
Revised 1933.

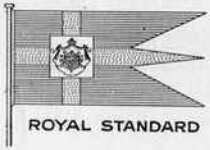


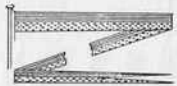












Note.—The blue is azure in every case but last 3 flags

Mercantile Marine.

From "Lloyd's Register," 1933 figures.
1339 vessels of 1,658,148 gross tonnage.

Displacements "Standard."

Administration.

Minister of Defence: Mr. Ivar Wennerström.
Chief of the Naval Staff: Rear-Admiral O. E. Lybeck.
President of the Navy Administrative and Technical Board: Rear-Admiral H. Åkormark.
Naval Attaché (London): Capt. E. A. Öberg.

INSIGNIA OF RANK ON SLEEVES.

	Amiral.	Vice-Am.	Konter-Am.	Kommendör.	Kommendörkapten. 1 graden.	Kommendörkapten. 2 graden.	Kapten.	Löjtnant.	Under-Löjtnant.	Fänrik
British equivalent	*Admiral.*	*Vice-Ad.*	*Rear-Ad.*	*Commodore.*	*Captain. (Senior)*	*Captain. (Junior)*	*Commander & Lieut.-Com.*	*Lieutenant.*	*Sub-Lieut.*	*Acting Sub-Lieu*

All civilian officers have stripes with triangular curl, and colour between stripes as follows:—Constructors and Engineers, *purple blue*; Doctors, *scarlet*; Paymasters, *white*.
Personnel: Active List, *about* 5500 officers and men. Total for Reserves cannot be estimated, as it is dependent on conscription, but includes 700 officers.

Modern Swedish Guns (Bofors).

(All details are unofficial).

Notation	Designation		Length in calibres	Model	Weight of Gun	Weight of A.P. shot	Initial velocity	*Max.* penetration firing A.P. capped at K.C.			Danger Space against average warship, at			*Nom.* per minute
								8000 yds.	5000 yds.	3000 yds.	10,000 yards	5000 yards	3000 yards	
	c/m	inches			tons	lbs.	ft.secs.	in.	in.	in.				
A[5]	28	11	45	'11	41	760½	2576†	10½	15	18	..	..	..	1·2
AA	25.4	10*	42	'94	29	450	2362	..	8	11	125	340	675	1
A	21	8.3	44	'98	17	275½	2460†	..	7	9½	100	425	600	2
C	15.2	6	50	'03	7½	100	2739†	..	..	7	75	230	460	6
E	15.2	6	45	'98	6	100	2460	..	..	6	60	200	410	6
	12	4.7	50	'11	3½	46½	2822	..	..	..	..	..	..	8
F	12	4.7	45	'94	2	46½	2430	..	..	3½	..	..	..	8

Guns marked † in the velocity column fire Bofors special nitro-compound.
* Also a Schneider Canet 10-inch Mark of which details are not available.

Torpedo.

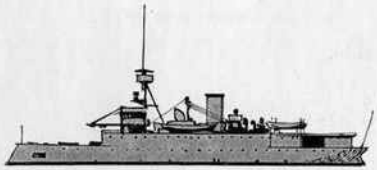
Whiteheads. *Submerged* tubes (Armstrong pattern). Torpedoes, 21 in., and 18 in. Since 1911 torpedoes have all been manufactured at Karlskrona.

Colour of Ships.

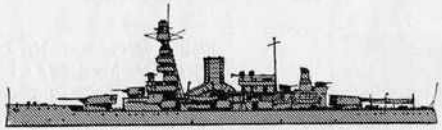
Light Grey all over.

Navy Estimates.

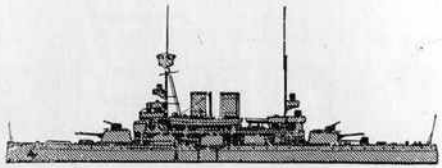
1933–34 = 33,900,000 Swedish crowns.



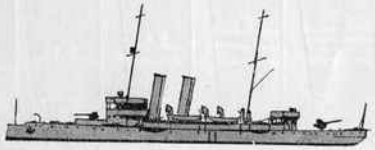
SVEA.



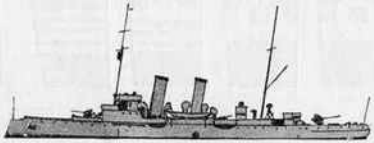
GUSTAF V.



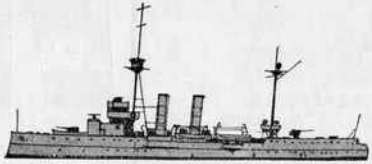
ÄRAN *class* (4 ships).



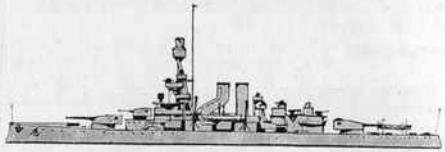
ORNEN. JACOB BAGGE.



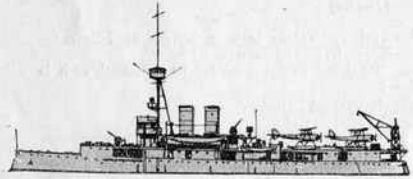
PSILANDER.



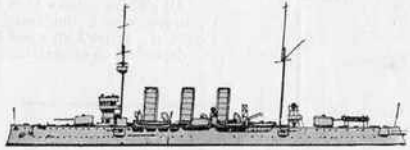
KLAS FLEMING.



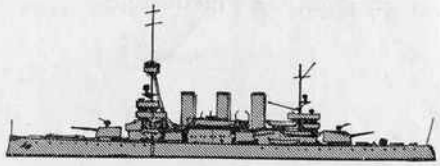
SVERIGE.



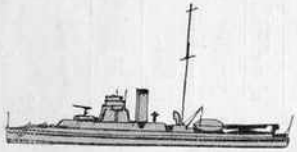
DRISTIGHETEN.



FYLGIA.

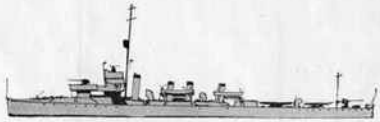


OSCAR II.

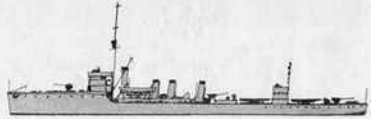


Torpedo Boats 5—14.

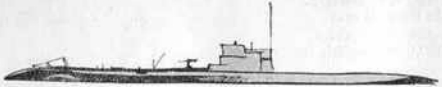
EHRENSKÖLD. NORDENSKJOLD.
KLAS-HORN. KLAS-UGGLA (with pole abaft funnels).



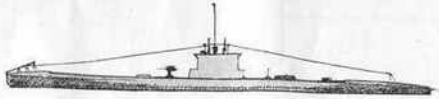
WALE *class* (6).



WRANGEL. WACHTMEISTER



ÄVERN *class*.



DRAKEN *class*.

HAJEN *class*.

(SVERIGE CLASS—3 Ships.)

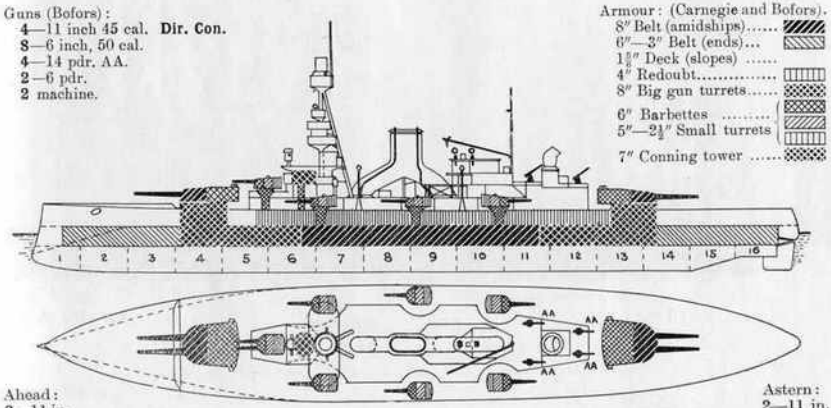
SVERIGE (May, 1915), **DROTTNING VICTORIA** (Sept., 1917) and **GUSTAF V** (Jan., 1918).

Displacement: 7,010 tons. Complement, 450.

Length (*w.l.*) { *Sverige*, 392·8 feet. / *D. V. & G. V*, 396·6 feet. } Beam, 61 feet. *Max.* draught, 22 feet.

Guns (Bofors):
4—11 inch 45 cal. **Dir. Con.**
8—6 inch, 50 cal.
4—14 pdr. AA.
2—6 pdr.
2 machine.

Armour: (Carnegie and Bofors).
8″ Belt (amidships).....
6″—3″ Belt (ends)...
1⅝″ Deck (slopes) .....
4″ Redoubt.....
8″ Big gun turrets.....
6″ Barbettes .....
5″—2½″ Small turrets
7″ Conning tower .....



Ahead:
2—11 in.
4 to 6—
6 in.

Broadside: 4—11 inch, 5—6 inch.

Astern:
2—11 in.
2 to 4 —
6 in.

Machinery: In *Sverige*, Curtis turbines by Kockum Co., 4 screws; in *Gustaf V* and *Drottning Victoria*, Westinghouse geared turbines by the Motala Company. 2 screws. Boilers: 12 Yarrow. Designed S.H.P. 20,000 in *Sverige*, 22,000 in *D. Victoria* and *Gustaf V* = 22·5 kts. Trials: 23 to 23·6 kts. Coal: *Normal* 350 tons; *maximum* 700 tons + 100 tons oil.

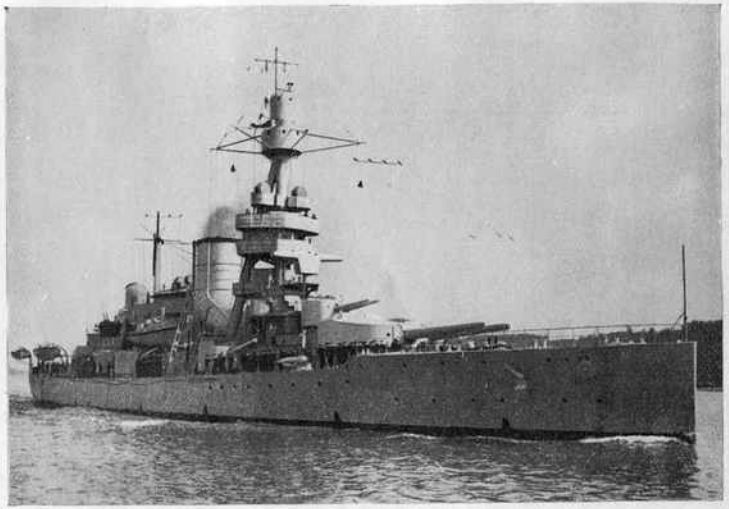
Engineering Notes.—In *D. Victoria* and *Gustaf V*, Westinghouse turbines consist of 2 sets on each shaft, each containing two turbines of the "divided-flow" type, driving propellers through double-pinion reduction gears (total weight of turbines and reduction gears about 160 tons):

Shaft H.P.	24,800	11,045	2,228
R.P.M. (turbines)	3,760	2,939	1,810
R.P.M. (propellers).....	210	167	101
Speed (knots)	23·6	19·2	12·3

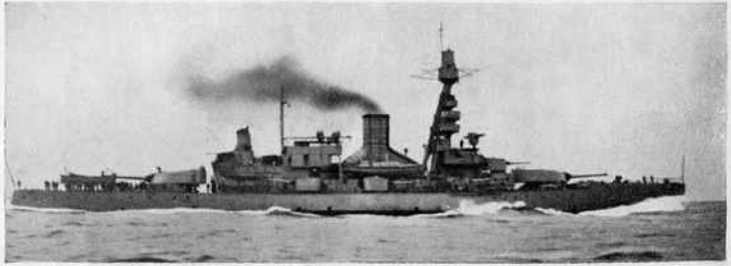
Gunnery Notes.—11 inch guns load in 17 seconds. Turrets somewhat cramped; are divided by partition bulkheads.

Armour Notes.—Shields to 11″ guns are 8″ on fore side, 4″ on side, 4½″ rear. Smaller gunshields are 5″ front, 3″ sides.

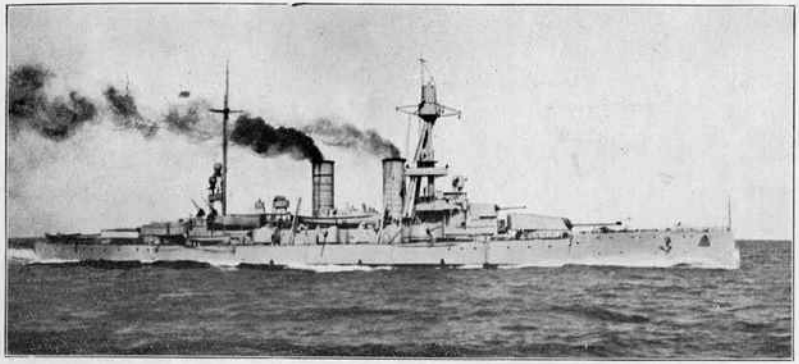
General Notes.—*Sverige* was sanctioned 1911; but upon a change of Government was cancelled by the Liberals. The nation then voluntarily subscribed a sum which at the end of April, 1912, amounted to nearly £970,000 for the building of this ship, which was estimated to cost £670,000; the balance was devoted towards commencement of *D. Victoria* and *Gustaf V* under the 1915-19 Naval Programme. Work on *D. Victoria* and *Gustaf V* was stopped during the war owing to non-delivery of armour plates from the U.S. Building was resumed in 1919. *Sverige* and *D. Victoria* built by Gotaverken, Gothenburg, and engined by Kockum Co., Malmö, and Motala Co., respectively. *Gustaf V* (in full, Gustaf den Femte) built and engined by Kockum Co., Malmö. Bows of this class are strengthened for icebreaking except in *Sverige*.



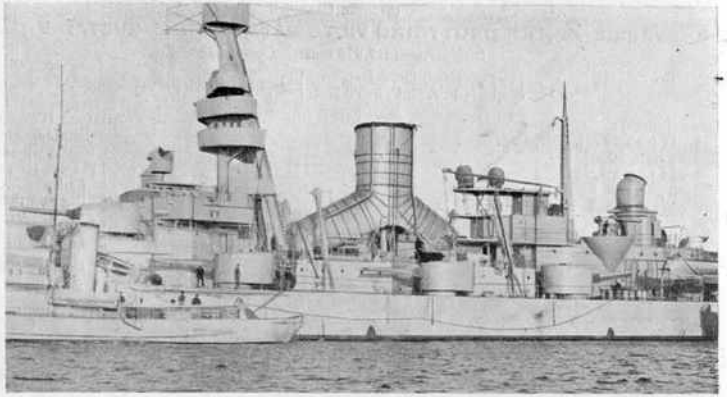
GUSTAF V. 1930 *Photo, Vår Flotta.*



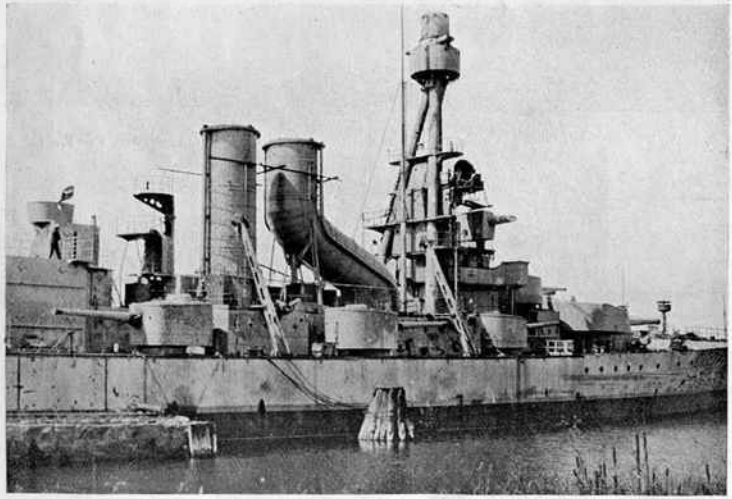
GUSTAF V. 1930 *Photo, Official.*



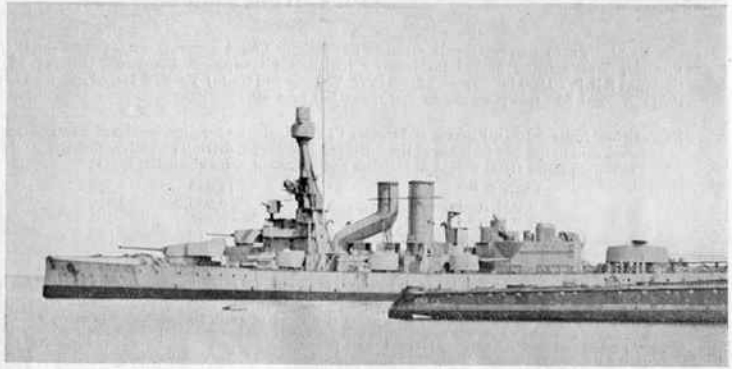
DROTTNING VICTORIA. (To be re-constructed like *Sverige.*) 1928 *Photo.*



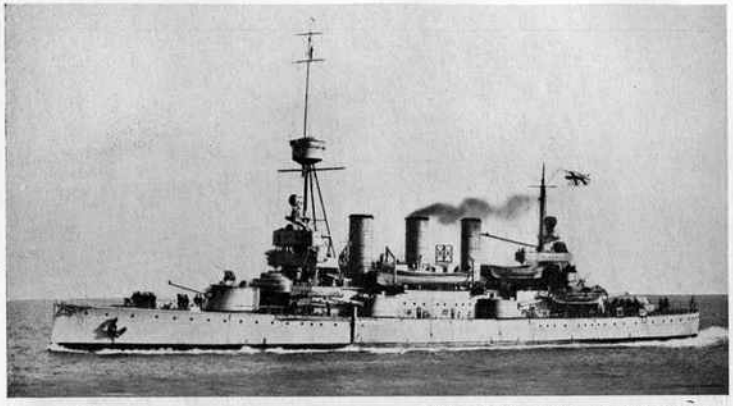
GUSTAV V. *Photo added,* 1932.



SVERIGE. 1933 *Photo, Commandr. T. Hayman.*



SVERIGE (reconstructing). 1933 *Photo, Commandr. T. Hayman.*



OSCAR II. 1930 *Photo, by courtesy of Ministry of Defence.*

OSCAR II (1905).

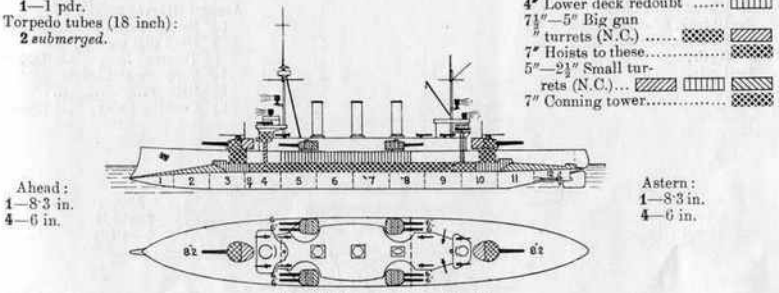
Displacement, 4150 tons. Complement, 339.

Length (*w.l.*) 313¾ feet. Beam, 50½ feet. *Maximum* draught, 18 feet.

Guns (Bofors):
2—8·3 inch, 44 cal.
8—6 inch, 50 cal.
8—6 pdr.
1—1 pdr.

Torpedo tubes (18 inch):
2 *submerged.*

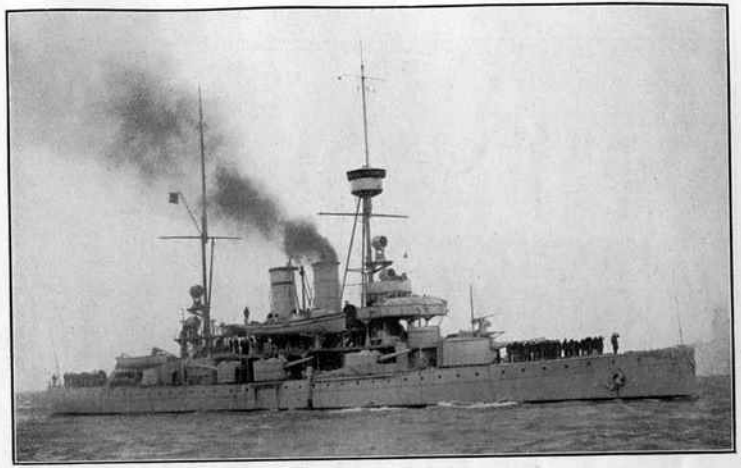
Armour (Krupp):
6″—4″ Belt (amidships)
2″ Deck (slopes)
6″ Bulkheads
4″ Lower deck redoubt
7½″—5″ Big gun turrets (N.C.)
7″ Hoists to these
5″—2½″ Small turrets (N.C.)
7″ Conning tower



Broadside: **2**—8·3 in., **4**—6 in.

Machinery: 2 sets 4 cylinder triple expansion. 2 screws. Boilers: 10 Yarrow. Designed H.P. 9000=18·3 kts. Coal: *normal* 350 tons; *maximum* 500 tons=2950 miles at 10 kts.

Notes.—Four searchlights carried—one on each bridge, and one on each mast. Built by Lindholmen Co., 1905-07. On *trial*: 9400=18·96 kts.



MANLIGHETEN. 1926 *Photo, Cribb.*

(ÄRAN CLASS—4 SHIPS).

ÄRAN (Aug., 1901), WASA (Sept., 1901), TAPPERHETEN (Nov., 1901) & MANLIGHETEN (Dec., 1903).

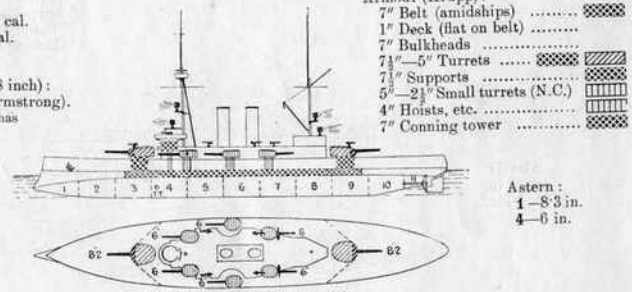
Length, (*w.l.*) 287 feet. Beam, 49¼ feet. *Maximum* draught, 16¾ to 17¾ feet.
Displacement, 3715 tons. Complement, 301.

Guns (Bofors):
2—8·3 inch, 44 cal.
6—6 inch, 45 cal.
10—6 pdr.*
1—1 pdr.

Torpedo tubes (18 inch):
2 *submerged* (Armstrong).

* *Manligheten* only has 8—6 pdr.

Armour (Krupp):
7″ Belt (amidships)
1″ Deck (flat on belt)
7″ Bulkheads
7½″—5″ Turrets
7½″ Supports
5″—2½″ Small turrets (N.C.)
4″ Hoists, etc.
7″ Conning tower



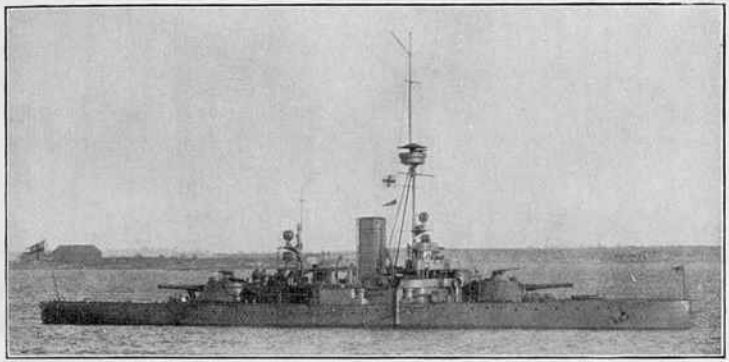
Broadside: **1**—8·3 in., **3**—6 in.

Machinery: 2 sets triple expansion. 2 screws. Boilers: 8 Yarrow. Designed H.P. 7400 = 17 kts. Coal: *maximum*, 300 tons. Endurance: 2000 at 10 kts.

Notes.—Where built: *Äran*, Lindholmen; *Wasa*, Bergsund; *Tapperheten* and *Manligheten*, Kockum.
Completed: *Äran*. 1902; *Wasa*, 1903; *Tapperheten*, 1904; *Manligheten*, 1906.

Wasa to be converted to s/m depot ship.

COAST DEFENCE BATTLESHIPS (*Kustpansarfartyg*).



1918 Photo, Karlsson, Karlskrona.

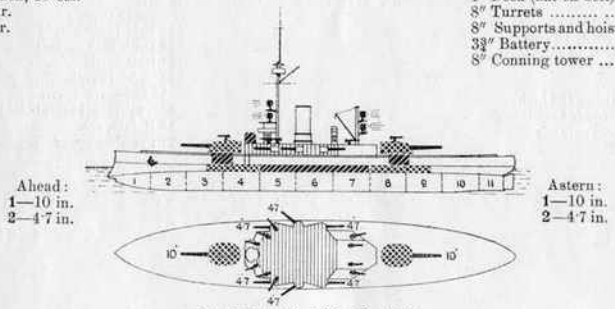
THOR (1898).

Displacement: 3350 tons. Complement, 263.

Length (*w.l.*), 278¼ feet. Beam, 48½ feet. *Maximum* draught, 18 feet.

Guns (Canet):
2—10 inch, 42 cal.
6—4·7 inch, 45 cal.
8—6 pdr.
1—1 pdr.

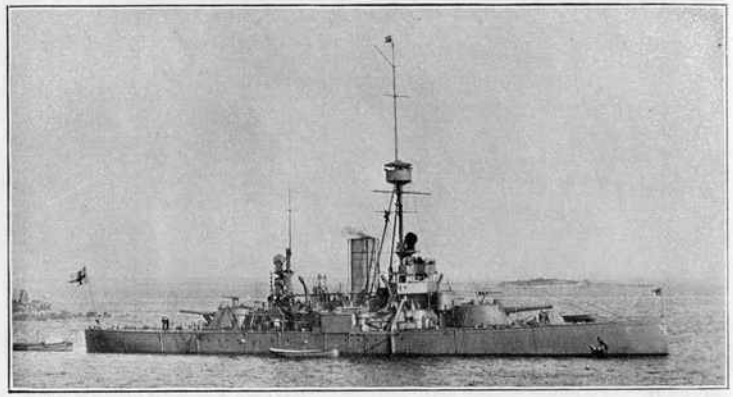
Armour (Harvey-nickel):
9½″ Belt
1″ Deck (flat on belt)
8″ Turrets
8″ Supports and hoists
3¾″ Battery
8″ Conning tower



Broadside: 2—10 in., 3—4·7 in.

Machinery: 2 sets, vertical triple expansion. 2 screws. Boilers: 6 Cylindrical. Designed H.P., 5000=16 kts. Coal: *normal*, 280 tons; *maximum*, 300 tons=2530 miles at 10 kts.

Notes.—4 searchlights. *Thor* was rebuilt in 1916, appearance being greatly altered. As originally built, she had two masts and two funnels. *Thor* built and engined by Bergsund Co., 1896-99.



1918 Photo, Karlsson, Karlskrona.

ODEN as re-built 1915. To distinguish from *Thor*, observe that chart house is slightly deeper fore and aft, and small topmast to stump of old mainmast is much higher. As will be seen by comparing photos and plans the 4.7 inch guns are differently arranged. Has plain top on tripod mast. *Thor* has a ringed top.

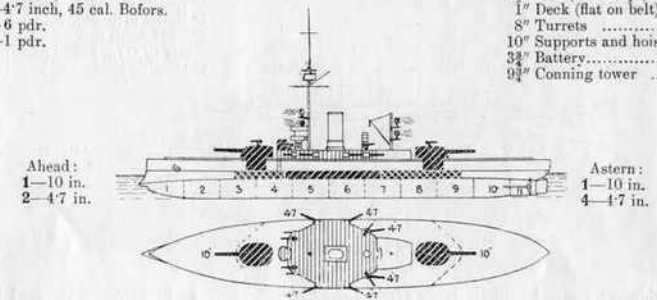
ODEN (March, 1896).

Displacement, 3350 tons. Complement, 267.

Length (*w.l.*), 278¼ feet. Beam, 48½ feet. *Maximum* draught, 18½ feet.

Guns (Canet and Bofors):
2—10 inch, 42 cal. Canet.
6—4·7 inch, 45 cal. Bofors.
8—6 pdr.
1—1 pdr.

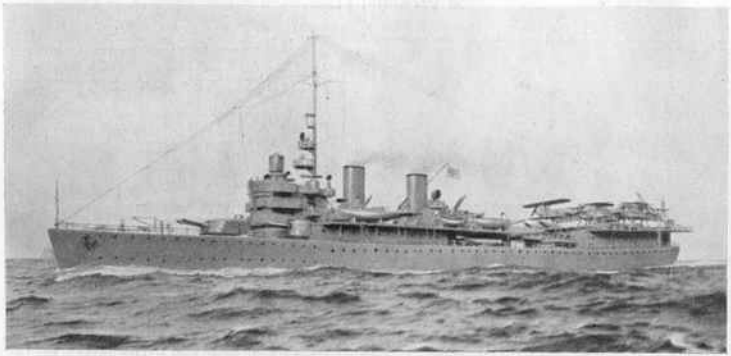
Armour (Harvey-nickel)
9½″ Belt (amidships)
1″ Deck (flat on belt)
8″ Turrets
10″ Supports and hoists
3¾″ Battery
9¾″ Conning tower



Machinery: 2 sets vertical triple expansion. 2 screws. Boilers: 6 cylindrical. Designed H.P. 5000=16 kts. Coal: *normal* 275 tons; *maximum*, 282 tons. Endurance: 2530 miles at 10 kts.

Laid down by Bergsund Co., 1894. Completed 1897. 4 searchlights. Re-constructed 1915, when appearance was greatly changed. As originally completed she had two masts and two funnels.

Aircraft Cruiser (*Flygplankryssare*).



GOTLAND. *Photo of model, "Var Flotta."*

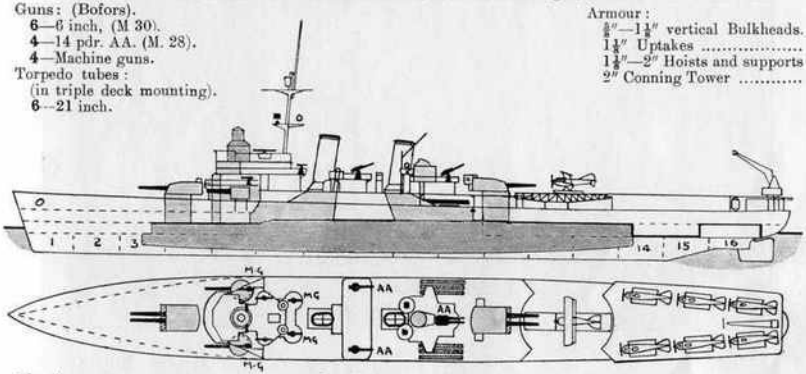
GOTLAND. (Sept. 14, 1933).

Displacement: 4,600 tons. Complement, 480.

Length, (*w.l.*) 426½ feet. Beam, 47¾ feet. *Max.* draught, 16 feet.

Guns: (Bofors).
6—6 inch, (M 30).
4—14 pdr. AA. (M. 28).
4—Machine guns.
Torpedo tubes:
(in triple deck mounting).
6—21 inch.

Armour:
⅝"—1½" vertical Bulkheads.
1½" Uptakes .....
1⅛"—2" Hoists and supports
2" Conning Tower .....



Ahead:
4—6 in.

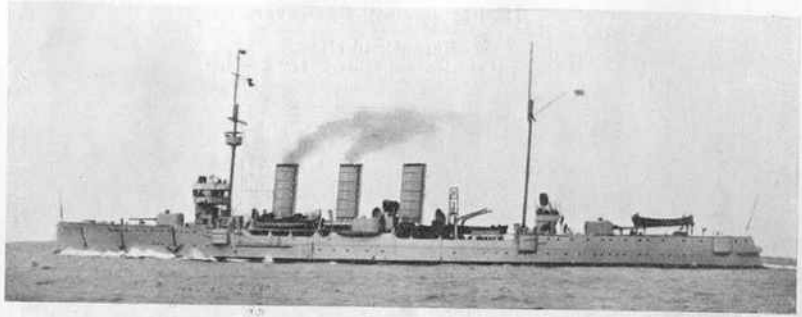
Broadside: **5**—6 in.

Astern:
2—6 in.

Machinery: 2 sets De Laval geared turbines. 2 screws. Boilers: 4. Designed S.H.P. 33,000=27 kts.

Note.—The first cruiser designed to act as an aircraft carrier, and represents a well thought out and exceedingly useful type of warship. As originally designed (see 1929 edition) there was a superfiring twin turret forward, but in order to save topweight this has been replaced by two single wing turrets athwart the conning tower. Speed has also been reduced a knot and displacement lowered some 300 tons, when design was re-cast, to reduce cost.

Armoured Cruiser (*Pansarkryssare*).



FYLGIA. 1931 *Official Photo.*

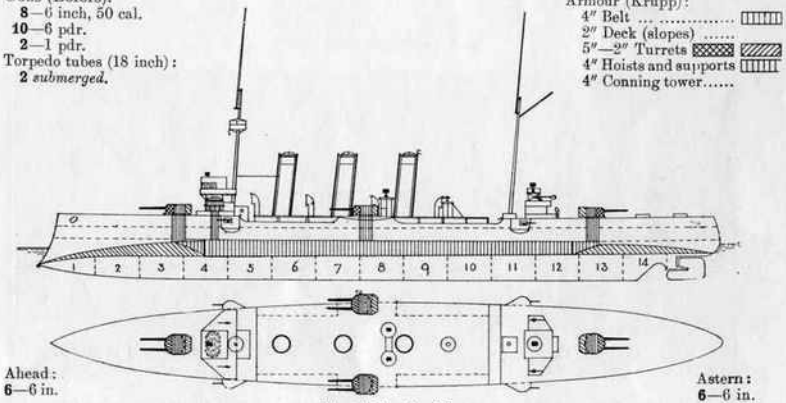
FYLGIA (Dec., 1905).

Displacement, 4125 tons. Complement, 341.

Length (*w.l.*), 377⅔ feet. Beam, 48½ feet. *Max.* draught, 20⅝ feet.

Guns (Bofors).
8—6 inch, 50 cal.
10—6 pdr.
2—1 pdr.
Torpedo tubes (18 inch):
2 *submerged.*

Armour (Krupp):
4" Belt ... .
2" Deck (slopes) .....
5"—2" Turrets
4" Hoists and supports
4" Conning tower.....



Ahead:
6—6 in.

Broadside: **6**—6 in.

Astern:
6—6 in.

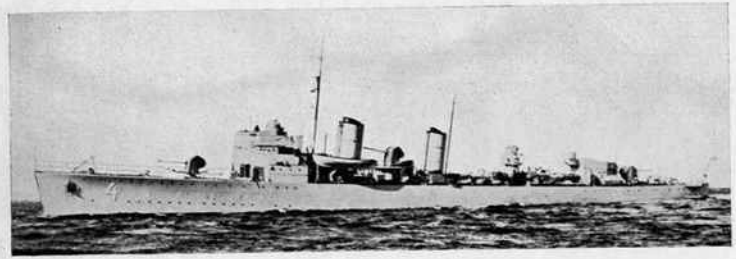
Machinery: 2 sets 4 cylinder triple expansion. 2 Screws. Boilers: 12 Yarrow. Designed H.P. 13,000=21·5 kts. Coal: *normal* 350 tons; *maximum* 900 tons=5770 miles at 10 kts.

General Notes.—Laid down by Bergsund Co., at Finnboda, in 1903, and completed 1907. Trials: 12,440 H.P. = 22·7 kts. Machinery by builders. Bow sponsons removed 1926-27.

12+2 (*building*) Destroyers.

6 Ehrensköld class.

2 building at Stockholm and Göteborg. Laid down 1933.



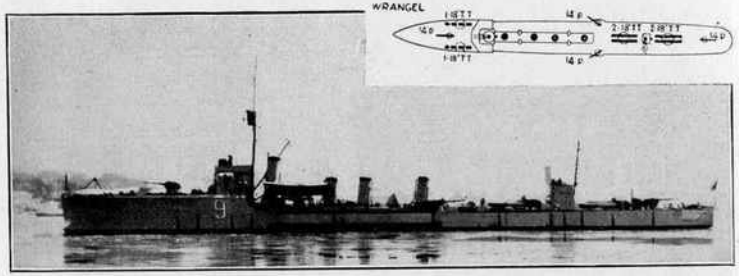
KLAS UGGLA. 1933 *Photo, Official*

Class numbers:—***Ehrenskjold*** (1). ***Nordenskjold*** (2). ***Klas Horn*** (3). ***Klas Uggla*** (4).

EHRENSKÖLD. (Now No. 1.) 1930 *Photo, Herr Ossi Janson.*

4 *Ehrensköld* class: ***Ehrensköld*** (Sept. 25, 1926), ***Nordenskjold*** (June 19, 1926). Built by Götaverken, Gothenburg and Kockum Co., Malmö, respectively. ***Klas Horn*** (June 13th, 1931), ***Klas Uggla*** (June 18th, 1931). Laid down 1928—by Kockum Co., and at Karlskrona D.Y., respectively. Displacement: 895 tons Dimensions: 293 (*w.l.*), 300 (*o.a.*) × 29½ × 10½ feet. Armament: 3—4.7 inch and 2—1 pdr. AA. guns; 6—21 inch torpedo tubes in triple deck mountings. De Laval Geared turbines. H.P. 24,000 = 35 kts. Fuel (oil only): 150 tons. Radius of action: 600 miles at full speed: 1600 miles at 20 kts. Complement, 125. Estimated cost: Kr.7,150,000 each. First pair completed in 1927. Second pair in 1932.

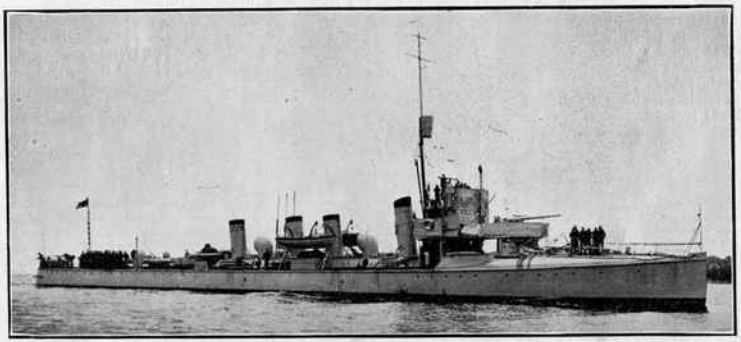
2 Wrangel class.



1928 *Photo, Herr Ossi Janson.*

2 *Wrangel* class: ***Wrangel*** and ***Wachtmeister*** (Lindholmen Co., Gothenburg, both launched 1917.) 465 tons. Dimensions: 232½ × 22 × 9½ feet. Armament: 4—14 pdr., 2 machine guns, 6—18 inch torpedo tubes in two twin-deck mountings and two single mountings, P. and S. in forecastle. Designed S.H.P., 11,000 (*n.d.*), 13,000 (*f.d.*) = 34 kts. Reported to have attained 34.8 kts. on trials. Have De Laval geared turbines. Oil: 103·5 tons. Complement, 81. Completed early 1918.

6 Hugin and Wale classes.



VIDAR. 1928 *Photo, Herr O. Janson.*

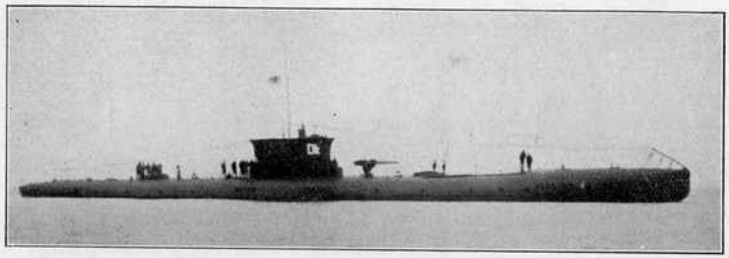
2 *Hugin* class: ***Hugin*** (1911), ***Munin*** (1912). 360 tons. Dimensions: 215½ × 20½ × 8½ feet. Guns: 4—14 pdr. 2 machine. Torpedo tubes: 4—18 inch. 4 Yarrow boilers. Curtis turbines. S.H.P., 10,000 = 31 kts. Fuel: 90 tons coal + 1½ tons oil. Endurance: 800 miles at 15 kts. *Hugin* built by Götaverken Co., and *Munin* by Kockum Co., Malmö.

4 *Wale* class:—***Wale*** (1907), ***Ragnar*** (1908), ***Sigurd*** (1908), ***Vidar*** ('09). 360 tons. Dimensions: 215½ × 20½ × 9 feet. Armament: *Wale*, 2—14 pdr., 4—6 pdr., 2 machine; other boats, 4—14 pdr., 2 machine; 4—18 inch tubes in all. 4 Yarrow boilers. Hull on Thornycroft lines. Coal: 90 tons. Radius of action: 920 miles at 15 kts. *Sigurd* built by Lindholmen Co, other three by Kockum Co.

16 (+ 4 building) Submarines.

1st Class Submarines.

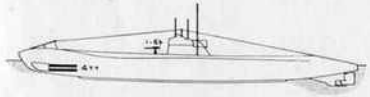
4 *Building.* ***Delfinen, Nordkaparen, Springaren*** and ***Sjölejonet*** Displacement. 540/—tons.



DRAKEN. 1929 *Photo.*

3 *Draken* class: ***Draken*** ('26), ***Gripen*** ('28), ***Ulven*** ('30), all Karlskrona, D.Y.
Dimensions: 213·2 × 20·9 × 11·7 feet = 667/— tons.
Armament: 1—3 inch gun. 4—21 inch Tubes.
H.P.: 2,800/— = 15/9 kts. Radius: 5600 miles at 10 kts. surface.

Valen (May 6th, 1925). Fitted for laying mines on the Normand-Fenaux system. Design generally follows that of *Uttern* class.
Dimensions: 185·9 × 23·2 × 10 feet = 545/— tons.

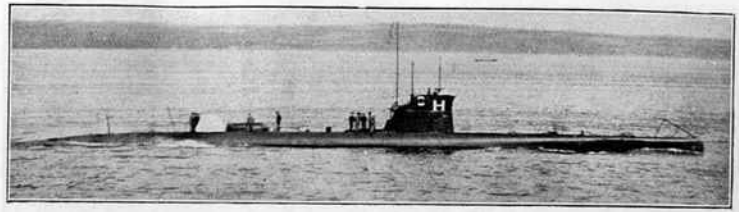


BÄVERN *class.*

UTTERN. 1930 *Photo, "Vår Flotta."*

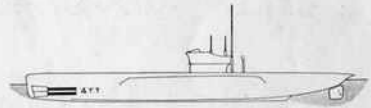
3 *Bävern* class: ***Bävern, Illern, Uttern*** (1921), built by Kockum Co., Malmö. Dimensions: 189·3 × 18·6 × 9·8 feet = 429/—tons. H.P.: 2,800 = 15 kts. *on surface,* —— = 9 kts. *submerged.* Guns: 1—6 pdr. AA., 1 M G. Tubes: 4—20·8 inch (bow). 8 torpedoes carried. Radius 300 miles at 15 kts. *surface,* 54 miles at 6 kts. *submerged.*

1st Class Submarines—*continued.*



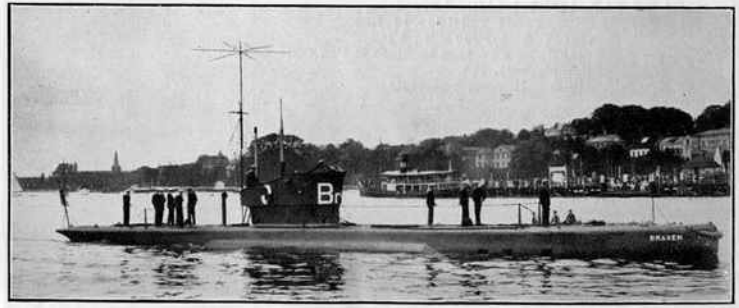
HAJEN. 1924, *Official Photo.*

3 *Hajen* class: ***Hajen*** ('17), ***Sälen*** ('18), ***Valrossen*** ('18), built by Kockum Co., Malmö. Guns: 1—6 pdr. AA. Tubes: 4—18 inch
Dimensions: 174·9 × 16·4 × 11·4 feet = 392/— tons.



ABBOREN *class.*

2nd Class Submarines.



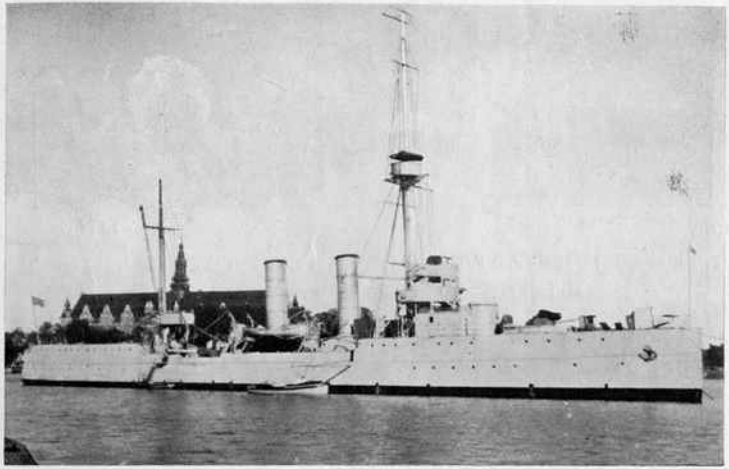
BRAXEN. 1928 *Photo, O. Janson, Esq.*

2 *Abborren* class: ***Abborren*** ('16), ***Braxen*** ('16). Karlskrona D.Y.
Dimensions: 102·9 × 12 × 10·9 feet = 176/— tons.

2 *Laxen* class: ***Laxen*** ('14), ***Gäddan*** ('15) Karlskrona D.Y.
Dimensions: 84·9 × 11·7 × 10·4 feet = 135/— tons.
4—18 inch tubes.

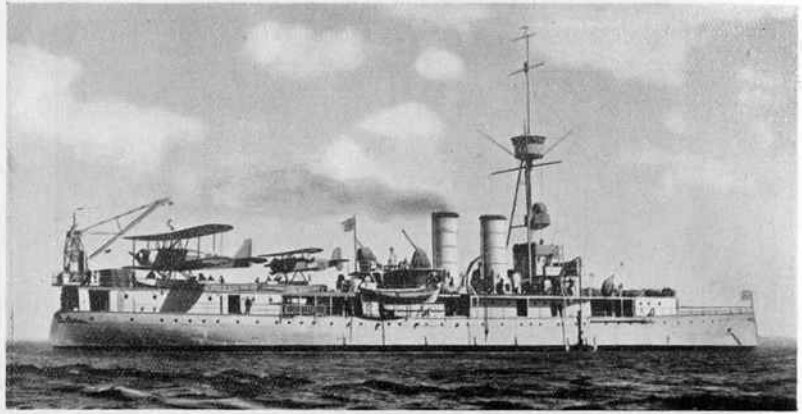
2 *Tumlaren* class ***Svardfisken. Tumlaren.*** (Kockum Co. Malmö, 1914).
Dimensions: 146·5 × 13·7 × 10·4 feet = 244/— tons. 2—18 inch tubes. (bow).

Minelayer.



CLAS FLEMING (1914). 1,570 tons.
Dimensions: 263 × 34 × 14 feet.
Guns: **4**—4·7″/50 cals., **4** M.G.
Machinery: Parsons turbines H.P. 7,000 = 20 kts.
Complement, 175.
Mines: Number uncertain.

Aviation Depot Ship



1931 *Photo, Official.*

DRISTIGHETEN (Lindholmen Co., 1900). 3,270 tons. Dimensions: 285 × 48½ × 17 feet. Guns: **4**—14 pdr. H.P. 5,000 = 16 kts. Coal: 310 tons. Is an old battleship converted into an Aircraft Tender and Depot Ship.

Torpedo Boats.

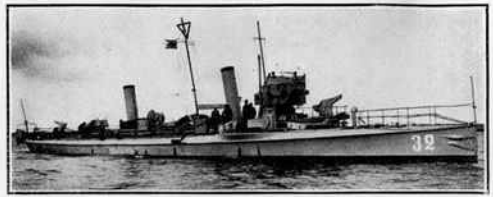
N : r 5, 6, 7, 8, 9, 14 (1906-08). Displacement, tons. Dimensions: 106 × 12¾ × 6½ feet. Armament: **1**—160 pdr., **2**—18 inch tubes. H.P. 800 = 21 kts. Coal: 22 tons. Complement, 14.

N : r. 3, N : r. 4. Built by Messrs. Thornycroft, at Hampton-on-Thames, 1925. Usual 55 ft. type C.M.B., with smoke screen apparatus.

36 Vedette Boats (*Vedettbåtar*).

4 boats. **Jägaren, Kaparen, Snapphanen, Väktaren.** Displacement: 245 tons. Speed = 24 kts. Guns: **2**—14 pdr. AA., **2** pom-poms. D.C. throwers. Paravanes. Dimensions: 177 × 19·6 × 8.2 feet. Laid down at Karlskrona D.Y. 1932.

Vedette Boats—*continued.*



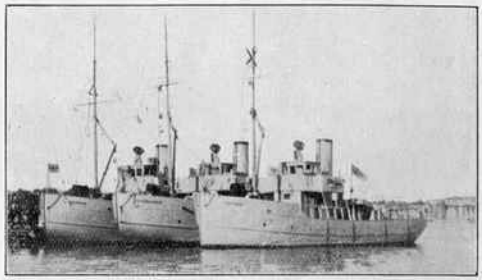
N : R 32. 1928 *Photo, O. Janson, Esq.*

11 boats, **Nos. 27—37,** by Karlskrona D.Y., Bergsund Co. and Lindholmen Co., 1898-1904. 90 tons. H.P. 1300 = 23 kts. Fuel: 13—20 tons. Guns: **2**—1 pdr. Complement, 15—18. All are ex-Torpedo boats with tubes removed.

1930 *Photo, "Var Flotta."*

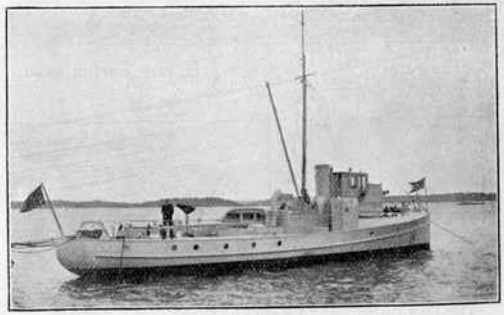
16 ex-torpedo boats of *Castor* class, **NOS. 38–54.** Displacement: 105 tons. H.P. 2,000 = 25 kts. Guns: **2**—6 pdr. **1**—18" tube. All built by Karlskona D.Y., Bergsund Co. and Götaverken Co. and launched 1908–11.

Tenders.



1924 *Photo.*

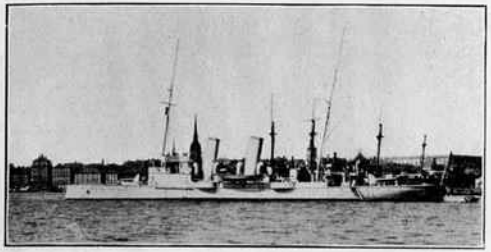
SÖKAREN, SVEPAREN, SPRÄNGAREN (1918, Motala Co.). 160 tons. Dimensions: 85·3 × 23 × 9·8 feet. H.P. 400 = 11 kts. Guns: **1**—6 pdr. Complement, 18.



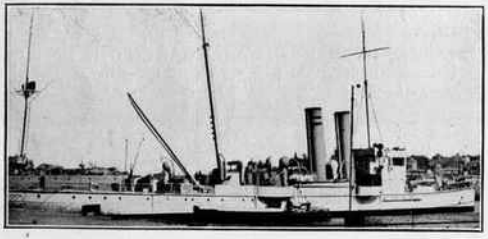
1926 *Photo. by courtesy of the Ministry of Defence.*

No. 19 (1914). 55 tons. Guns: **1**—1 pdr., **1** M.G. Speed: 10 kts. (oil motor). Used as an Aircraft Tender.

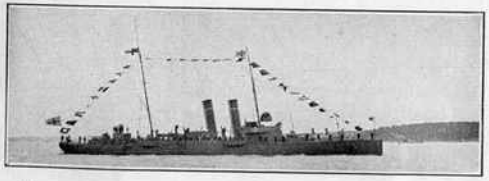
Depot Ships (*Depåfartyg*).



PSILANDER. 1926 *Photo, Herr Ossi Janson.*



JACOB BAGGE. 1928 *Photo, Herr Ossi Janson.*



ÖRNEN (distinguished by cut-away stern).

PSILANDER (1900), 750 tons, **JACOB BAGGE** (1899), 750 tons, **ÖRNEN** (1896), 750 tons. Designed H.P. 4,000=20 kts. Coal, 100 tons. Armament: 2—4·7 inch, 4—6 pdr.

General Notes: To distinguish between these ships compare relative positions of foremast, bridges, and fore funnel.

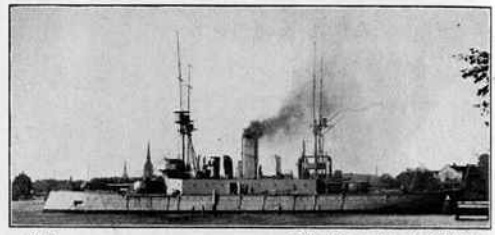
Depot Ships.

SVEA. 1933 *Photo, Official.*

SVEA. Old Coast Defence Battleship, built by Lindholmen Co., 1886, rebuilt 1904 and 1924. 2,840 tons. Dimensions: 248·4×48·5×16·4 feet. Guns: 2—6 pdr. (*AA*), 2 M.G. Armour: 11¾"–8" Belt, 2" Decks. 2 screws. 6 cyl. boilers. I.H.P. 4,650=15 kts. Coal: 220 tons. Fitted as a depot ship for Submarines.

1932 *Photo, Herr Ossi Janson.*

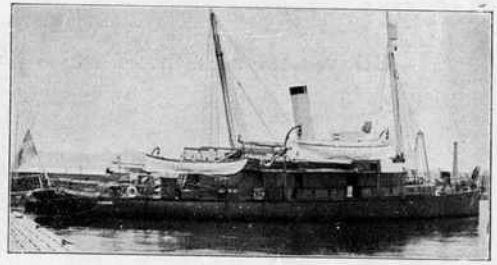
NIORD (Lindholmen Co. 1898). Ex-Battleship. 3700 tons. Dimensions 278¼ × 48½ × 18 feet. Guns: 2—10 inch. Used as a receiving ship.



GÖTA. 1927 *Photo, Herr Ossi Janson.*

GÖTA (Lindholmen Co., 1889). Old Battleship, somewhat similar to *Svea*, but 3150 tons. Dimensions: 258½×48×17¼ feet. Guns: 2—10 inch. Used as a receiving ship.

Surveying Ship.

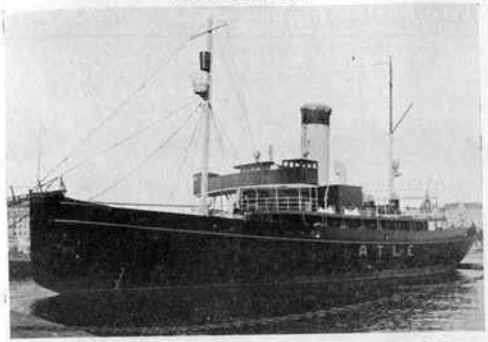


SVENSKSUND. 1928 *Photo, Herr O. Janson.*

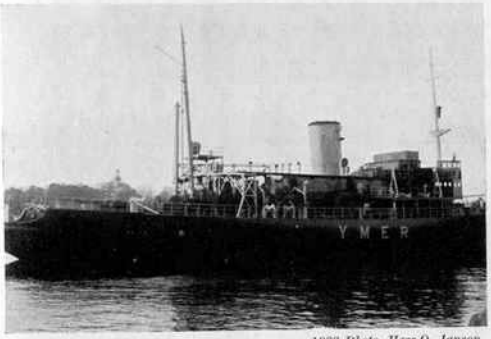
SVENSKSUND (1891). 360 tons. Guns: 2—6 pdr. H.P. 400=12½ kts Coal: 50 tons.

Note.—This ship is employed as (*a*) a Surveying Ship (*b*) a Fisheries Protection Vessel, according to season of the year and when necessity arises for her use on these duties.

Ice Breakers.



ATLE. 1933 *Photo, Herr O. Janson.*



YMER. 1933 *Photo, Herr O. Janson.*

Oiler.

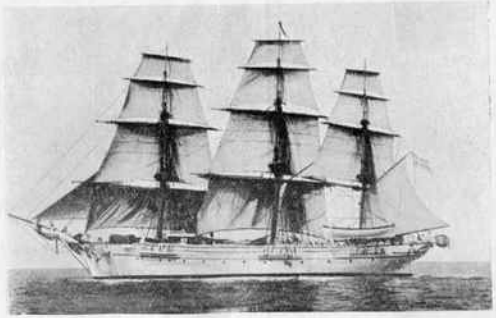
BRÄNNAREN. 1933 *Photo, Herr O. Janson.*

Training Ships (*Övningsfartyg*).

Cruiser **FYLGIA** (previously described) employed as Training Ship, with various gunboats as Tenders.

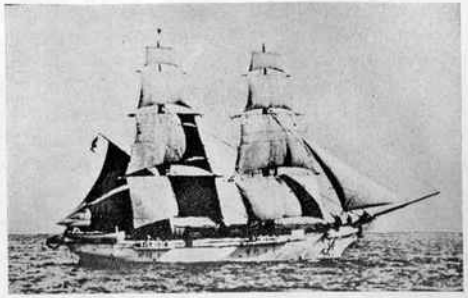
1933 *Photo, Official.*

AF CHAPMAN (*ex-G. D. Kennedy, ex-Dunboyne*). (Whitehaven S.B. Co., 1888). Iron ship of 3100 tons. 243 × 37½ feet. Purchased 1923 for use as a Training Ship.



NAJADEN (1897). } 350 tons.
JARRAMAS (1900). }

1930 *Photo, "Var Flotta."*



FALKEN (1877). 140 tons. 1930 *Photo, "Var Flotta."*

Note —These Training vessels have no motive power except sails.

New Construction.

The following Ships of the 1927 programme are built, building or to be built :—

Type.	Built.	Building.	To be built.
Battleship ..	—	—	1
Aircraft Cruiser ..	—	1	—
Destroyers ..	4	2	—
Vedette Boats ..	4	—	4
Submarines ..	2	4	—

TURKISH FLEET.

Revised 1933 by courtesy of the Minister of National Defence.

Flags.

Ensign and Jack.

President's Standard.

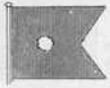
Generalissimo.

Minister of Defence.

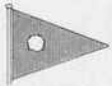
Admiral.

Vice Admiral.

Rear Admiral.



Commodore.



Senr. Officer.

Red Crescent.

Vice Admiral 1st. class has three balls.

Admiral.

Vice Admiral. 1st. class.

Vice Admiral.

Rear Admiral

Captain.

Lieut. Captain.

Commander.

Lieutenant.

Sub.Lieutenant.

Sub. Lieutenant. 2nd class.

Admiral	Müşür Amiral
Vice Admiral (1st. class)..	Birinci Ferik Amiral
Vice Admiral	Ferik Amiral
Rear Admiral	Liva Amiral
Captain	Miralay
Lieut. Captain	Kaymakam
Commander	Binbaşi
Lieutenant	Yüzbaşi
Sub-Lieutenant	Birinci Mülâzim
2nd. class Sub-Lieutenant	Mülâzim
Acting Officer	Zabit Vekili

Minister of National Defence: Zekai Bey.
Under-Secretary for Navy: Captain Mehmet Ali Bey.
Colour of Ships: *Grey.*

Mercantile Marine.

(From "Lloyd's Register," 1933 figures).
187 Vessels of 188,961 gross tonnage.

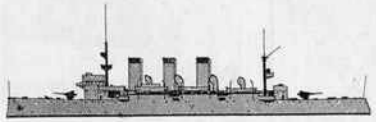
RECOGNITION SILHOUETTES.

Kemal Reis *class* (3)

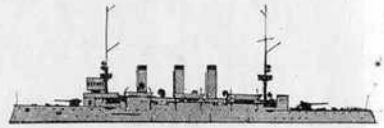
Aydinreis.

Peik-i-Shevket *class.*

Yavuz.



Mecidiye.



Hamidiye.

Tinaztepe. Zafer.

Adatepe. Kocatepe.

Dumlupinar. Sakarya.

Samsun *class.*

YAVUZ (ex-German *Goeben*, March, 1911).

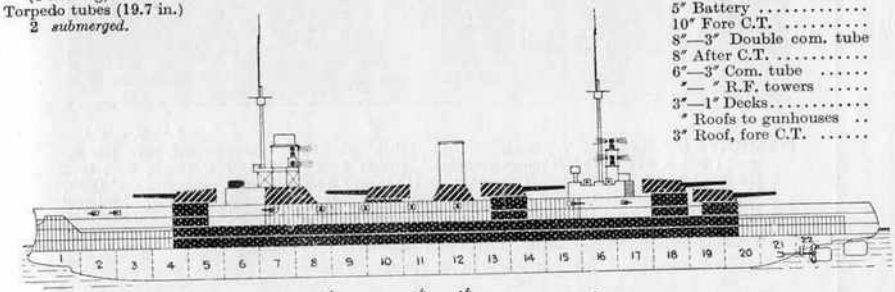
Displacement, 22,640 tons. Complement, 1013.

Length (*w.l.*), 610½ feet. Beam, 96 ft. 10 in. Draught (*max. load*), 26 ft. 11 in.

Guns (*see Notes*):
10—11 in. 50 cal.
10—5.9 in. 45 cal.
8—3.4 in. 45 cal.
2 M.G.
(1 landing)
Torpedo tubes (19.7 in.)
2 *submerged*.

Anti-Torp. Pro. :—
2″—1″ deep H.T. Steel B.H., between extreme barbettes : Minute internal subdivision.

Armour (Krupp):
10½″ Belt (amidships) tapers to 6″ at top and 5″ below
3½″ Belt (bow and stern)
9″—8″ Barbettes .....
8″ Gunhouses.....
5″ Battery .....
10″ Fore C.T. .....
8″—3″ Double com. tube
8″ After C.T. .....
6″—3″ Com. tube .....
″—″ R.F. towers .....
3″—1″ Decks.....
″ Roofs to gunhouses ..
3″ Roof, fore C.T. .....



Ahead :
6—11 in.
2—5.9 in.
1—19·7 in. T.T.

Broadside : 10—11 in., 5—5.9 in., 2—19.7 in. T.T. (angling 30° before to 30° abaft beam).

Astern :
6—11 in.
2—5.9 in.
1—19.7 in. T.T.

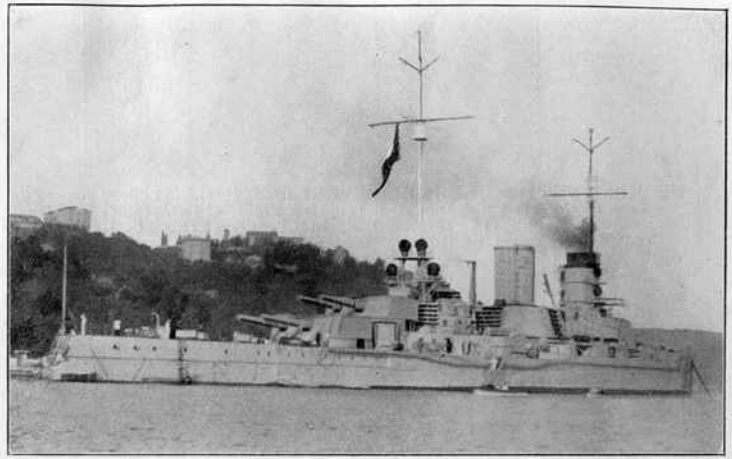
Machinery : Parsons turbine, 4 shaft, direct drive. Boilers (see *General Notes*) : 24 Schulz-Thornycroft = German "Marine Type." Designed H.P. nominally 52,000 = 25·5 kts. Coal : *normal* about 1000 tons ; *maximum* 3050 tons. Oil fuel : 200 tons.

Gunnery Notes.—All guns German Navy Models, 5·9 inch range up to 16,500 yards. Two R.F. towers are sunk into the deck, near amidships (echelon) barbettes. All range-finding and fire-control instruments were rendered useless by Germans before Armistice, 1918. Under the Penhoët Yard's contract for refit, a French fire control system has been installed.

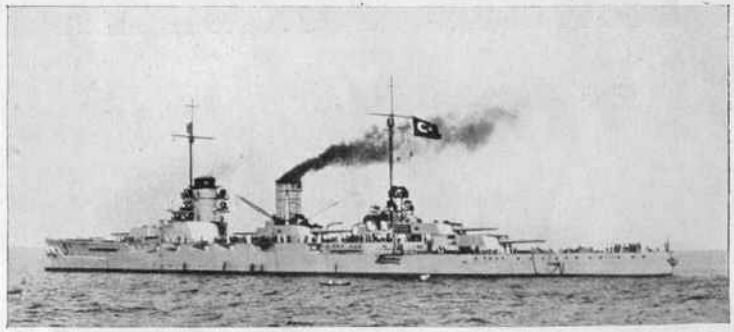
Torpedo Notes.—Torpedoes and torpedo tubes German Navy type. Torpedoes probably German G VII*** (23-ft. steam heater type) with 430 lbs. charge, and *max.* ranges of (*a*) 11,700 yards at 28 kts., (*b*) 5,500 yards at 35 kts. Stern *submerged* torpedo tube is on starboard quarter. 8—60″ controlled S.L. Torpedo nets removed during War.

Armour and Protection Notes.—Like all German built Battle Cruisers, this ship is heavily armoured and minutely subdivided. Main belt between extreme barbettes is about 350 feet long, 11″ at w.l., tapering to about 8″ on upper edge, and 6″ on lower edge. Barbette bases only 1″ where covered by belt.

Engineering Notes.—Endurance is (*a*) 5,350 miles at 10 kts., (*b*) 2,370 miles at a continuous *max.* sea-going speed of 23 kts She made 26·8 knots on Trials for 6 hours, and 27·1 kts. for 4 hours, on Mar. 17, 1930.

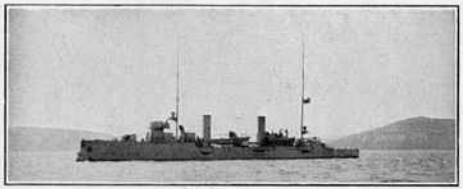


YAWUZ 1924 *Photo, Turik Hussein, Esq.*



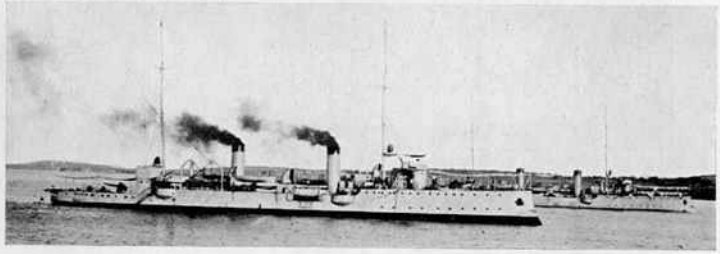
General Notes.—Laid down, August, 1909, by Blohm & Voss, Hamburg, under 1909 German Navy Programme, as a sister to German *Moltke*. Completed, July, 1912. Transferred to the Turkish Navy in 1914, and during the war was mined five times and severely damaged. A contract was signed in December, 1926, with the Chantiers de St. Nazaire (Penhoët), for the repair and refit of this battle-cruiser at Ismid ; the work was considerably delayed owing to a floating dock proving unequal to her weight, and completion was not reached till 1930.

Torpedo Gunboats (*Torpedo Muhribi*).



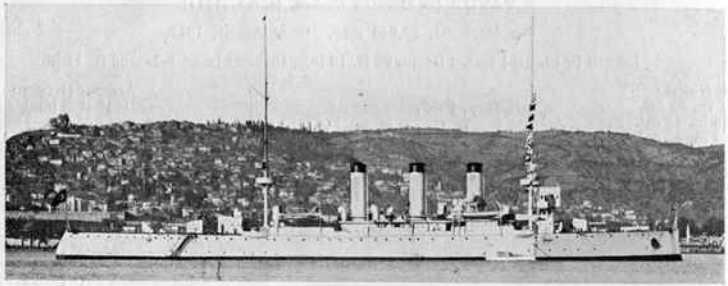
BERKISATVET (1906). **PEIKISHEVKET** (Nov., 1906). Built at Krupps' Germania Yard, Kiel. 1014 tons. Dimensions: 262½ × 27⅞ × 9½ feet. Guns: **2**—2.9 inch, **4**—6 pdr. Torpedo tubes: **3**—18 inch. Designed H.P. 5100 = 22 kts. Coal: 240 tons. 25 mines carried. Complement, 105.

Note.—Torpedoed by British Submarine *E* 14, during 1915, but beached and salved.



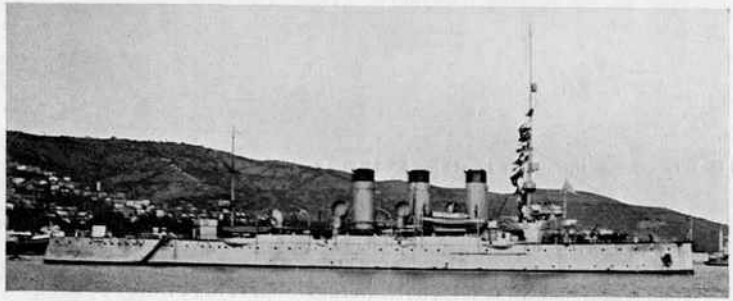
1932 *Photo, Official.*

Cruisers (*Muhafasali Kruvasor*).



1932 *Photo, Official.*

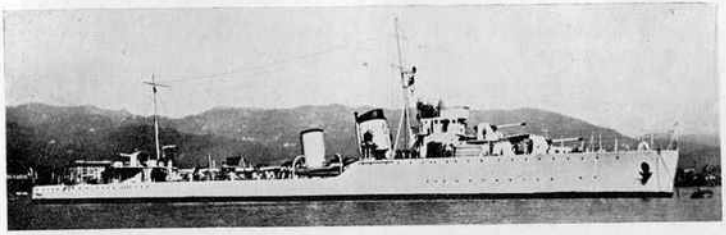
HAMIDIYE (ex-*Abdul Hamid*, Armstrong, Sept., 1903). 3830 tons. Complement, 302. Dimensions: 368 × 47½ × 16 feet (*mean* draught). Guns: **2**—5.9 inch, 45 cal. Krupp, **8**—3 inch (75 m/m) 50 cal. Schneider. Torpedo tubes (18 inch): **2** *above water*. Armour: 4" Deck. Machinery: 2 sets 4-cylinder triple expansion. 2 screws. Boilers: Cylindrical. Designed H.P. 12,000 = 22 kts. (*forced* draught). Present best speed about 16–18 kts. Coal: *normal*, 275 tons; *maximum*, 750 tons. Endurance: 5550 miles at 10 kts. At present serves as Training Ship for Naval Cadets. Fitted as a Mine-layer. 70 mines.



1932 *Photo, Official.*

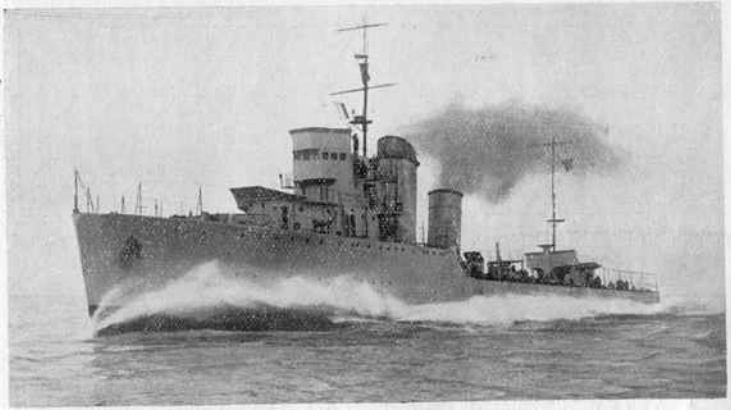
MECIDIYE (ex-Russian *Prut*, ex-Turkish *Medjidieh*, July 25th, 1903). Mined and sunk in Black Sea, 1915. Salved, repaired and re-fitted at Nicolaieff for Russian Navy, 1915-16. Seized by Austro-German Armies at Sevastopol, 1918, and returned to Turkish Navy. 3300 tons. Complement, 365. Dimensions: 330 × 42 × 17½ feet. (*max.* draught). Guns (as re-armed): **6**—5.1 inch (Vickers 1914), **4**—3 inch 50 cal. (Schneider). Deck, 1". H.P. 12,000 = about 18 kts., now. Babcock and Wilcox boilers. Coal: 600 tons. Endurance: 4700 miles at 10 kts. Built by Cramps, Philadelphia. (Refitted and reboilered 1930).

2 Destroyers.



1932 *Photo, Official.*

2 *Ansaldo* boats: ***Kocatepe*** (7-2-31) and ***Adatepe*** (19-3-31). Laid down at Sestri Ponente, Jan. 15th, 1930.
Displacement: 1,250 tons (*standard*),
1,350 tons (*normal*),
1,650 tons (*full load*).
Dimensions: 328·6 × 30·4 × 18·6 (height of hull) feet.
100·20 (97·7) × 9·26 × 5·7 (height of hull) metres.
Geared Parsons turbines. S.H.P. 40,000 = 38 kts.
3 Thornycroft boilers with superheaters.
Guns: 4—4·7", 50 cal., 3—40 m/m AA. and 2 pom-poms.
Tubes: 6—21" in triple mountings.
Oil, 360 tons. Complement, 149.
These boats are of Ansaldo design and are named after mountains near Smyrna associated with Turkish military glories.



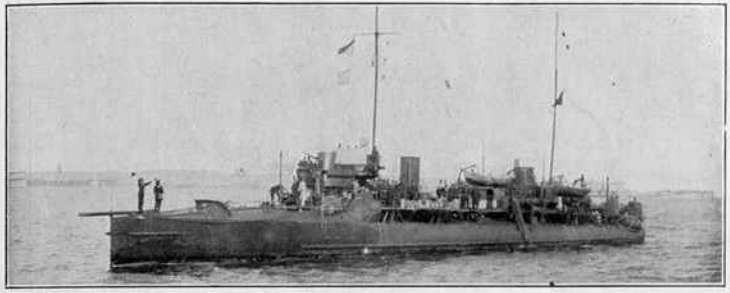
KOCATEPE. 1931 *Photo.*

2 Destroyers.

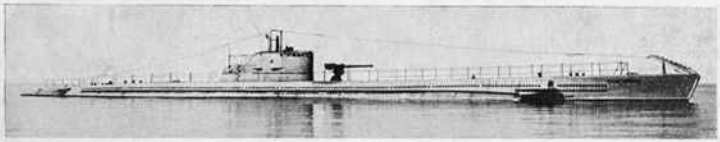
ZAFER. 1933 *Photo Official.*

2 *C.N. del Tirreno* boats: ***Tizaz Tepe*** (27-7-31). ***Zafer*** (20-9-31). Contracted for on May 15th, 1930, and laid down in the Summer of 1930.
Displacement: 1,350 tons (*normal*).
1,610 tons (*full load*).
Dimensions: 307(*p.p.*) × 30⅓ × 10¼ feet.
Geared Parsons turbines. S.H.P. 35,000 = 36 kts.
3 Thornycroft boilers with superheaters.
Guns: 4—4·7", 50 cal., 2—40 m/m AA., 2 M.G.
Tubes: 6—21" in triple mountings.
Oil: 350 tons. Complement, ?
These boats are of Italian design and generally resemble the Italian "Turbine" class.

TIZAZ TEPE. 1933 *Photo Official.*



3 *French type* boats: ***Samsun, Basra,*** (both launched at Bordeaux 1907), and ***Tasoz*** launched by Creusot, Chalons, (1907). 290 tons. Dimensions: 185×21×9½ feet. Armament: **2**—9 pdr., **6**—1 pdr., **2**—18 inch tubes. I.H.P. 6000 =29 kts. Coal: 70 tons. Endurance: 975 miles at 15 kts. Complement, 67. *Tashoz* re-fitted, 1923-24. *Samsun*;—**1**—75 mm. gun. Present speed about 20 kts.



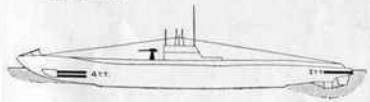
1 *Bernardis* minelaying type: ***Sakarya*** (2-2-31) (Monfalcone). Disp.: 610/940 tons. Dims.: 196·1 (*p.p.*)×20·2× 13 feet. Diesel M.A.N. H.P. 1,600. Motors H.P. 1,100=16/9·5 kts. Radius 4 000 miles at 10 kts.

4 Submarines.

DUMLUPINAR. 1931 *Photo.*

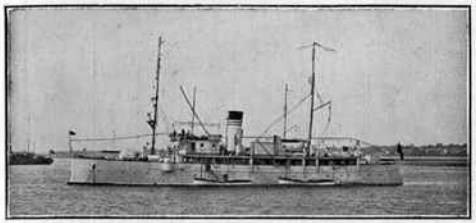
1 *Bernardis* type: ***Dumlupinar*** (4-3-31) laid down 1929 by Cantiere Navale Triestino, Monfalcone. Displ. 920/1150 tons. Dimensions: 223×19×14 feet. Machinery: 2 sets Diesels, H.P. 3000=17·5 kts. on surface. Electric motors of 1000 H.P.=9 kts. *submerged*. Armament: **1**—4 inch gun, **6**—21 inch tubes.

BIRINCI INÖNÜ. 1927 *Photo, R. F. Scheltema, Esq.*



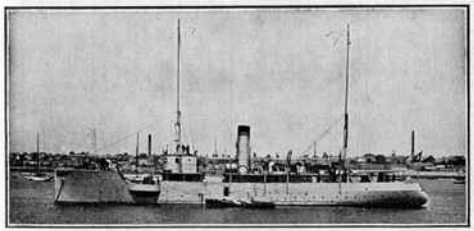
2 *Fijenoord* type: ***No. 1*** (February 1, 1927) ***No. 2*** (March 12, 1927). (In Turkish these numbers are rendered as BIRINCI INÖNÜ, IKINCI INÖNÜ. Both built by Fijenoord Co., Rotterdam. Displ. 505/620. Dimensions: 192½ × 19 × 11½ feet. 2 sets M.A.N. Diesels. Speed: 13·5/8·5 kts. Guns: **1**—37 mm. Tubes: **6**—17·7 inch (4 bow, 2 stern).

Surveying Ship.



1 *St. Nazaire* type: **AYDINREIS** (June, 1912). Refitted in 1925. 502 tons. Dimensions: 178½ × 27½ × 8 feet. Boilers: Babcock. H.P. 1025 = 14 kts. Guns: 2—3 inch, 2—6 pdr.

Mine Sweepers.



3 *La Seyne* type: **KEMAL REIS** (ex *Duruk Reis*, Feb., 1912), **HIZIR REIS** (Feb., 1912) and **ISA REIS** (Dec., 1911). 413 tons. Dimensions: 154¼ × 25¾ × 4½ feet. Guns: 3—3 inch (12 pdr.), 2—3 pdr., 2 M.G. H.P. 850 = 14 kts. Refitted, 1923. The 2 forward 3 inch guns shown above in sponsons, are now mounted on forecastle.

Mine Layer.

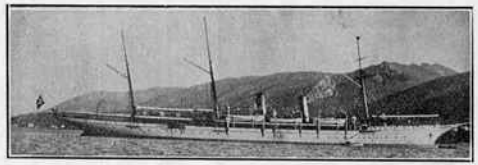
NUSRET (1912). 365 tons. Dimensions: 132 × 22 × 8½ feet. Speed: 15 kts. Can carry 25 mines. Now fitted with deep sea diving apparatus, and 210 metres has been attained.

Sea-going Tug.

(Both fitted for Mine Laying.)

INTIBAH (ex-*Warren Hastings*, Port Glasgow, 1886). Iron. 616 tons *gross*. Dimensions: 202 × 30 × 12 feet. H.P. 1670 = 12 kts. 2 screws. Carries 20–25 mines.

Yachts.

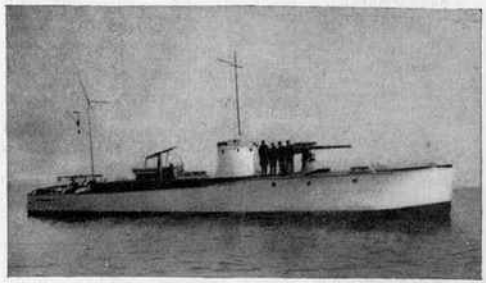


ERTUĞRUL (Armstrong, 1903). 964 tons. Dimensions: 260 (*p.p.*) × 27½ × 11½ feet. Guns: 8—3 pdr. H.P. 2500 = 21 kts. Machinery: Hawthorn Leslie. Boilers: Cylindrical. To be refitted for use as Presidential Yacht.

SÜĞÜTLÜ (Armstrong, 1903). 188 tons. Speed: 14 kts. In good condition.

Note—At present in the list of Navigation Co.

16 Motor Launches.



1931 *Photo.*

DOĞAN, MARTI, DENIZKUSU.

3 *S.V.A.N.* boats, built at Venice, 1930-31. 32 tons. 34 kts. 2 torpedoes, 1—3 inch gun.

8 Boats (1926). 25 tons. 4 depth charges carried.

Photo, Messrs. J. I. Thornycroft & Co.

5 boats: *Nos. 11, 14, 15, 18, 21.* Are Thornycroft type motor patrol boats, built 1911, for customs, police and coastguard duties. Dimensions: × × 2½ feet. Guns: 1 M.G. or 1 small Q.F. 140 H.P. Thornycroft petrol motor = 11 kts. Bullet-proof steel over conning position and engines.

UNITED STATES FLEET.

Revised from Official Handbook, "Ships' Data, U.S. Naval Vessels," and from information furnished by courtesy of the Navy Department, Washington, D.C., 1933.
(The Navy Department accepts no responsibility whatever for the accuracy of the data as actually published herein.)

UNIFORMS.

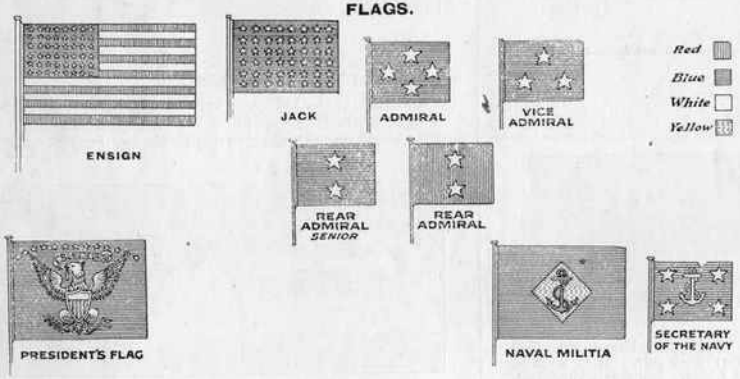
As Rear-Admiral, but with two and one extra thin stripes respectively.

Admiral. Vice-Admiral. Rear-Admiral. Captain. Commander. Lieut.-Commander. Lieutenant. Ensign.

The rank of Admiral has been provided for the Chief of Naval operations, Navy Dept., also the ranks of Admiral and Vice-Admiral for certain flag officers afloat.

Note.—Lieutenants, junior grade, have 1½ stripes. Chief Warrant Officers one stripe broken with blue. Line Warrant Officers star without any stripe. Staff Warrant Officers under Chiefs have no sleeve mark. Engineers same as Line Officers (interchangeable). Other branches than executive wear no sleeve star, but have badge of branch over top stripe.

FLAGS.



Senior officer when of or below rank of captain flies a blue triangular flag. Assistant-Secretary of Navy has a flag same as Secretary's with colours reversed, *i.e.*, white ground and blue anchor and stars.

Commander in Chief: Franklin D. Roosevelt.
Secretary of the Navy: Claude A. Swanson.
Assistant Secretary of the Navy: Henry L. Roosevelt.
General Board: Rear-Admiral J. V. Chase.
Rear-Admiral G. R. Marvell.
Rear-Admiral F. H. Scofield.
Rear-Admiral A. E. Watson.
Captain H. L. Brinser.
Captain E. S. Jackson.
Commander H. K. Turner.
Commander T. C. Kinkaid.
Commander T. S. Wilkinson.
Commander A. T. Clay.
Naval Attaché, London: Captain A. L. Bristol.

Personnel U.S.N. and Marine Corps:
Officers, 16,809.
Men, 98,449
(Reserves): Officers, 4,256.
Men, 18,179.

Principal Guns in the U.S. Fleet.

(Officially revised, 1929.)
Built at Washington Gun Factory, proved at Indian Head, Dahlgren, Va., and Potomac Range.

Notation.	Nominal Calibre.	Mark or Model.	Length in Calibres.	Weight of Gun.	Weight of A.P. Shot.	*Service* Initial Velocity	*Maximum* penetration firing *capped* A.P. direct impact against K.C. armour.			Muzzle Energy.
							9000	6000	3000	
	inch.			tons.	lbs.	ft. secs.	in.	in.	in.	ft-tons.
HEAVY	16	II	50	128	2100	2800	...	...	...	...
	16	I	45	105	2100	2600	...	...	...	98,531
	14	IV	50	81	1400	2800	...	...	...	76,087
	14	I	45	63⅛	1400	2600	18	...	...	...
	12	VII	50	56·1	870	2900	11·0	13·9	17·5	50,783
	12	VI	45	53·6	870	2700	10·6	13·3	16·6	44,020
	12	V	45	52·9	870	2700	9·8	12·3	15·5	44,020
	10	III	40	31·6	510	2700	6·9	9·0	11·9	25,772
MEDIUM	8	IX	55	29.7	250	3000	...	...	...	16,240
	8	VI	45	18·7	260	2750	4·4	6·1	8·6	13,630
	8	V	40	18·1	260	2500	4·0	5·3	7·5	11,264
	6	XII	53	10	105	3000	..	...	...	6,551
	6	VIII	50	8·6	105	2800	2·3	3·2	5·2	5,707
	6	VI	50	8·3	105	2600	2·2	2·9	4·7	4,920
	6*	IX	45	7·0	105	2250	2·1	2·5	3·8	3,685
	6*	IV. VII	40	6·0	105	2150	2·1	2·4	3·6	3,365
	5*	VII	51	5·0	50	3150	1·4	1·8	3·4	3,439
	5	VI	50	4·6	50	3000	1·4	1·7	3·2	3,122
	5	V & VI	50	4·6	60	2700	1·6	2·0	3·5	3,032
	5*	II, III, IV	40	3·1	50	2300	1·4	1·7	2·6	1,834
LIGHT and AA.	4◦	IX	50	3·0	33	2900	...	...	...	1,926
	4◦	VIII	50	2·9	33	2800	1·2	1·5	2·6	1,794
	4◦	VII	50	2·6	33	2500	1·2	1·4	2·2	1,430
	4◦	III, IV, V, VI	40	1·5	33	2000	...	1·2	1·7	915
	3§	X	50	1·15	13	2700	...	...	...	657
	3	V, VI, *S-A*	50	1·0	13	2700	...	0·8	1·2	658
	3◦	II, III	50	0·9	13	2700	...	0·8	1·2	658

*= Brass cartridge case.

Guns of 1899 and later have Vickers breech, etc. All guns use nitro-cellulose.

§ Anti-aircraft gun.

Naval Appropriation: 1931-1932, $360,101,593.

Mercantile Marine.

("Lloyd's Register," 1932, figures.)

Total *gross* tonnage, including Great Lakes and Philippines, 13,546,000 including 120 vessels of 16 knots and over.

Note.—Starred Paragraphs (***) are official data, furnished to "Fighting Ships" by courtesy of the Navy Department.

I.—Ordnance, &c.

DIRECTORS.—In all Battleships, Newer Light Cruisers and Destroyers. Type of Director: Navy type. Range Clocks on masts and Deflection Scales on gunhouses, as in British Navy.

FIRE CONTROL.—Latest type is self-synchronising electric.

****RANGE FINDERS.*—Made in various sizes from short 3-feet base range finders for navigation to 30-feet base range finders for use in turrets. Standard practice in U.S. Navy is now to mount one range finder in each turret.

****HIGH EXPLOSIVES.*—T.N.T. and Explosive "D" are standard high explosives for U.S. Navy.

****NON-RICOCHET SHELLS.*—Flat-nosed type: does not ricochet from surface when fired at elevation of over 2°. Made in 3 inch, 4 inch, 5 inch and 6 inch sizes for guns of equivalent bores. Delay action fuze commences on impact with water. Use of this shell converts gun into what is practically a long range depth charge thrower, the flat-nosed shell acting as depth charge.

****STAR SHELLS.*—Range, three to six land miles. Made for 3 inch, 4 inch, 5 inch and 6 inch guns. Time fuze lights lamp and expels parachute and burner through base of shell. Normally, shell detonates at 1000 feet. Burner, 800,000 candle power, burning for 30 seconds, and illuminating sea for one mile diameter.

II.—Torpedoes.

***Torpedoes in U.S. Navy are all turbine-driven. 21 inch is standard size used, though 18 inch still exist in older vessels. (No current official details available of marks, ranges, speeds, charges and types of heater.) Hammond radio-dynamic (distance-controlled) torpedo has been reported under test.

III.—Mines.

***Made in various sizes and of constructions particularly adapted for work they are expected to perform. Anchor similar to British type.

Unofficial Notes.—Mk. VI anti-submarine type of mine is reported to weigh 1400 lbs. and to have 300 lbs. T.N.T. charge. Body of mine, spherical, 3 feet diameter. Form of detonation uncertain; said to consist of antennae fitted with the Earle Patent Magnetic Pistol. Sinker is box-shaped and has wheels to gauge of laying ship's mine-discharging rails. Mine and sinker float together immediately after laying, while a 90 lb. plummet (attached to ½ inch steel wire) sinks. The "plummet cord" is measured off to same depth at which mine is to float below surface. When plummet cord is spun full out, latch is unlocked and mine and sinker separate. Mine still floats on surface, while mine-mooring cable begins to spin off drum and sinker descends. Immediately the plummet touches bottom, the running-out of mine-mooring cable is stopped and cable is locked. Sinker (or anchor) then comes down to bottom, drawing down the mine to the desired depth below the surface. Soluble safety plug used. Antennae said to consist of thin conducting wires and magnetic pistols, floating out in a star pattern all round body of mine and giving a contact diameter of 50 feet. Has been found effective against large surface ships. Being light and easily handled, it has been adopted for laying by Light Mine Layers.

IV.—Aircraft Bombs.

***(*a*) 18 lb. Explosive charge, T.N.T.
(*b*) 25 lb. Explosive charge, T.N.T.
(*c*) 158 lb.* Explosive charge, T.N.T.
(*d*) 214 lb.* Explosive charge, T.N.T.
(*e*) 230 lb. (British design).* Explosive charge, Amatol.
(*f*) 266 lb.* Explosive charge, T.N.T.
(*g*) 500 lb. Explosive charge, T.N.T.
(*h*) 1000 lb. Explosive charge, T.N.T.

Note.—Types marked * for Anti-Submarine use.

V.—Anti-Submarine.

****DEPTH CHARGES.*—Mk. IV.—Charge 600 lbs. of T.N.T. Dimensions: 24 inch diameter, 28 inches long. 100 feet effective radius, hydrostatic firing valve, similar to Mks. II and III Depth Charges.

***Depth Charge, Mks. II and III. Charge: 300 lbs. of T.N.T. Dimensions: 18 inch diameter, 28 inches long. Effective within a radius of 70 feet from point of detonation. Limit of detonation adjustable between 36 and 300 feet. Safety device prevents detonation due to gun blast, etc., detonation above six fathoms, or when thrown overboard with firing device in the off position. Detonation by hydrostatic pressure only. During War, destroyers carried from 30 to 50 depth charges and vessels on submarine patrols up to 100 depth charges.

****Y-GUN OR DEPTH CHARGE PROJECTOR.*—Two barrels set at an angle of 90°, each barrel 3 feet long and 6 inch bore. 300 lb. depth charges fastened to arbors, inserted in barrels of Y and common powder charge exploded at junction of barrels; range of about 30 yards obtained.

HYDROPHONES.—K-tube fish type, 30 miles acoustic radius, but operating vessel must stop engines and auxiliaries while listening. SC- and MB-tube types, 3 miles acoustic radius built into hull and insulated against noise; can be used without stopping ship.

(Also *v.* Non-Ricochet Shells; Aircraft Bombs, Sweeping Gear.)

VI.—Sweeping Gear.

PV's as British Navy of H.S.S.S. and H.S.M.S. types, but with slight modification of inhaul gear. Methods of attachment also same as British Navy.

VII.—Searchlights.

No details known, but in latest ships are of controlled type, as in British Navy. Battleships of later types carry 8 per ship; those of older types, prior to *California*, only have 4 per ship.

VIII.—General.

All battleships carry 3 'planes and one or two catapults; in most ships, latter are of new explosive type.

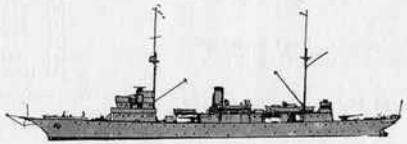
S.C. boats.

"Bird" *class.*

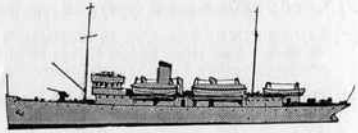
Eagle boats.

Langley.

Wright.

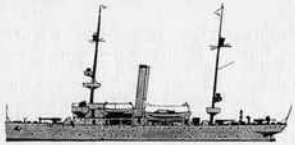


Bushnell.



Fulton.

Sacramento.

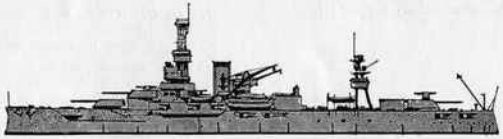


Asheville, Tulsa.

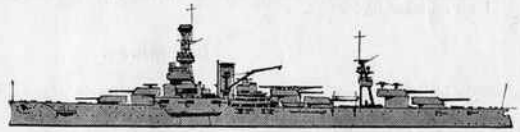
"New Mexico" *class.*

Oglala.

Saratoga, Laxington.

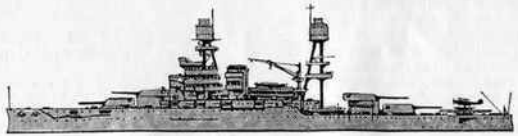


Wyoming.



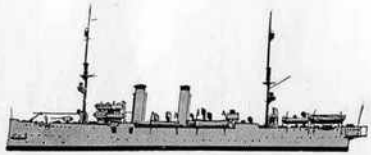
Arkansas.

Texas, New York.



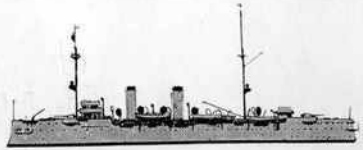
Pennsylvania, Arizona.

Oklahoma, Nevada.



AROOSTOOK.

YOSEMITE.

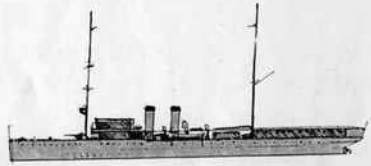


BALTIMORE.

GUAM.
TUTUILA.

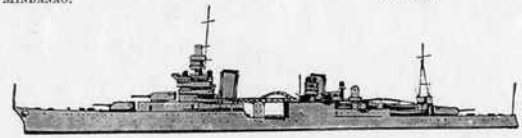
LUZON.
MINDANAO.

MONOCACY.
PALOS.



ISABEL.

"MARYLAND" and "CALIFORNIA" *classes.*

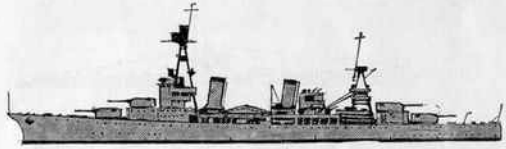


INDIANAPOLIS.

PORTLAND

CHESTER, LOUISVILLE, NORTHAMPTON.

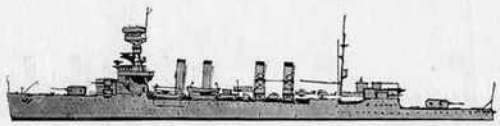
HOUSTAN, AUGUSTA, CHICAGO.



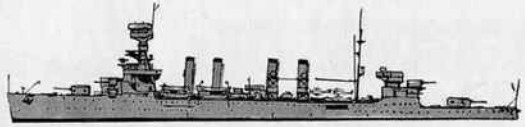
SALT LAKE CITY, PENSACOLA.

"NEW ORLEANS" *class.*

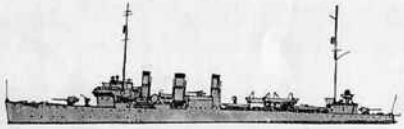
RECOGNITION SILHOUETTES.



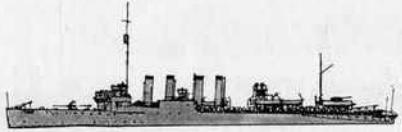
"Omaha" *class* (9 ships.)



Marblehead only.



Connor, Stockton, Gwin.



Light Mine Layers.

Flush Deckers.

R 1—20. (20).

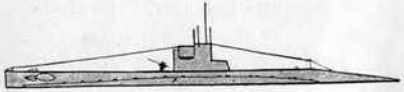
Barracouda, Bass, Bonita.

S 4, 6—41. (36).

S 42—47. (6).

Argonaut.

S 48—50. (3).

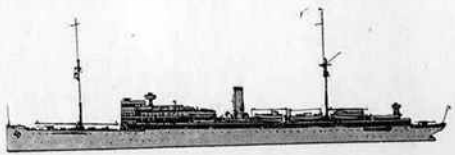


O 1—4, 6—10. (9).

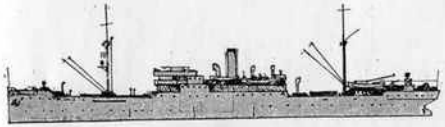
Narwhal, Nautilus.

BEAVER.
(*S/m. Tender.*)

RAPPAHANNOCK.
(*Store Ship.*)



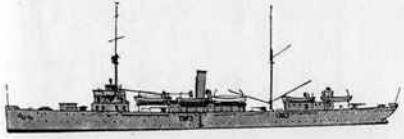
WHITNEY, DOBBIN.
(*Destroyer Tenders.*)



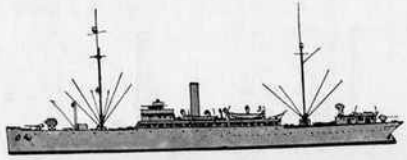
CAPELLA. VEGA. PROCYON.
SIRIUS. REGULUS. GOLD STAR.
SPICA. ANTARES. (*Cargo Ships, etc.*)

ALTAIR, DENEBOLA, RIGEL.
(*Destroyer Tenders.*)

ARGONNE, CHAUMONT.



MELVILLE.
(*Destroyer Tender.*)



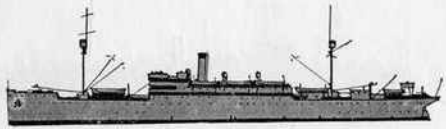
BRIDGE.
(*Store Ship.*)

BLACK HAWK.
(*Destroyer Tender.*)

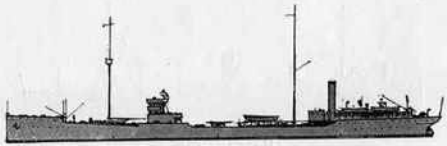
HANNIBAL.

ARCTIC BOREAS, YUKON.
(*Store Ships.*)

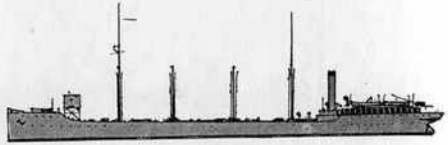
SAVANNAH.
(*S/m. Tender.*)



BRIDGEPORT.
(Destroyer Tender.)



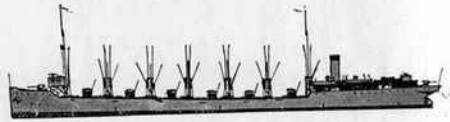
BRAZOS, NECHES, PECOS, CUYAMA.
(Oilers.)



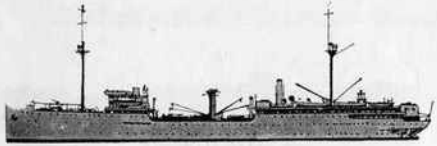
MAUMEE.
KANAWHA.
(Oilers.)

HOLLAND.
(S/m. Tender.)

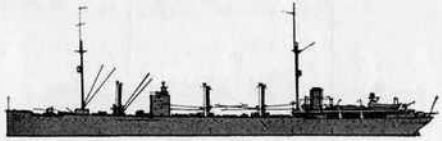
RAPIDAN. RAMAPO. TRINITY.
SALINAS. SAPELO. KAWEAH.
TIPPECANOE. SEPULGA. LARAMIE.
MATTOLE. *(Oilers.)*



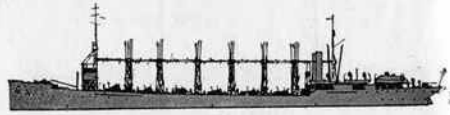
NEREUS.
PROTEUS.
(Colliers.)



MEDUSA.
(Repair Ship.)

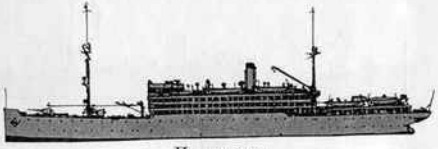


NITRO, PYRO.
(Ammunition Ships.)



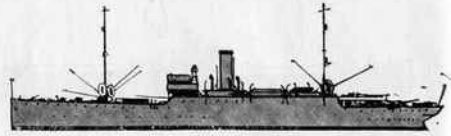
JASON,
(Aircraft Tender.)

NEPTUNE.
(Collier.)



HENDERSON.
(Transport.)

CANOPUS.
(S/m. Tender.)



CAMDEN.
(S/m. Tender.)

Fleet Flagship.
PENNSYLVANIA

Battle Force Flagship.
CALIFORNIA

Battleships.
WEST VIRGINIA (*flag*)

Div. 1.	*Div.* 2.
ARKANSAS	NEW MEXICO
NEW YORK	MISSISSIPPI
OKLAHOMA	
TEXAS (F)	
Div. 3.	*Div.* 4.
ARIZONA	COLORADO
NEVADA	MARYLAND
IDAHO*	TENNESSEE
	WEST VIRGINIA (F)

Cruisers.
TRENTON (F)

Div. 2.	*Div.* 3.
TRENTON	CONCORD
MARBLEHEAD	OMAHA
MEMPHIS	CINCINNATI
	MILWAUKEE

Destroyers.
DETROIT (*flag*)

Tenders.	*Targets.*
MELVILLE	LAMBERTON
ALTAIR	BOGGS
RIGEL	

Squadron II.
BORIE (F)

Div. 4.	*Div.* 5.	*Div.* 6.
AARON WARD(F)	RATHBURNE (F)	DORSEY (RF)
BUCHANAN	WATERS	LEA
CROWNINSHIELD (RF)	TALBOT	ELLIOT
	DENT (RF)	ROPER (F)
HALE		

Squadron IV.
LITCHFIELD (F)

Div. 10.	*Div.* 11.	*Div.* 12.
PERRY (F)	HOVEY (RF)	HULBERT
TREVER	SOUTHARD (F)	NOA
WASMUTH	LONG	WM. B. PRESTON (RF)
ZANE (RF)	CHANDLER	
		PREBLE (F)

Div. 16.	*Div.* 12.
TRACY	ALDEN
DAHLGREN	BROOME
DEWEY (*when comm'd.*)	SICARD
FARRAGUT (*when comm'd.*)	PRUITT (F)

Reserve Squadron 20.

Aircraft. Battle Force.
SARATOGA (*flag*)
LEXINGTON
RANGER (*when comm'd.*)
LANGLEY

Minecraft. Battle Force.

Div. 1.	*Div.* 2.
GAMBLE (F)	LARK
RAMSAY	QUAIL
MONTGOMERY	TANAGER (F)
BREEZE	WHIPPOORWILL

SCOUTING FORCE
INDIANAPOLIS (*flag*)

Cruisers.
CHICAGO (*flag*)
VESTAL (*repair ship*)

Div. 4.	*Div.* 5.
CHESTER	CHICAGO (F)
NORTHAMPTON (F)	LOUISVILLE
PENSACOLA	HOUSTAN
SALT LAKE CITY	PORTLAND

Dest. oyers.
RALEIGH (*flag*) WHITNEY (*tender*)
DOBBIN (*tender*)
MANLEY (*experimental ship*)

Squadron I.
DALLAS (F)

Div. 1.	*Div.* 2.
DICKERSON	BARNEY
LEARY (RF)	BIDDLE
SCHENCK	BRECKENRIDGE (F)
HERBERT (F)	BLAKELEY (RF)

Squadron II.
HOPKINS (F)

Div. 7.	*Div.* 8.	*Div.* 9.
CHILDS (F)	REUBEN JAMES	HATFIELD
WILLIAMSON	(RF)	BROOKS
BARRY (RF)	BAINBRIDGE	FOX
GILMER	MCFARLAND	KANE
	GOFF	

Reserve Squadrons.

HUMPHREYS	GREER
KING	UPSHUR
LAWRENCE	TARBELL
SANDS	YARNALL

Training Squadron. Scouting Force.
WYOMING (*flag*)

Destroyer Squadron 10.
ELLIS (F)

Div. 28.	*Div.* 29.
CLAXTON	BERNADON
FAIRFAX	COLE
HAMILTON	DU PONT
TAYLOR (F)	ELLIS (F)

SUBMARINE FORCE
BUSHNELL (*flag*)

New London Base.
FALCON EAGLE 58
S/m. Div. 4. R 2, 3, 4, 10, 11, 13, 14 (F)

Coco Solo Base. Squadron III.
S/m. Div. 5. S 10, 11, 12 (F), 13, 48
S/m. Div. 6. S 14 (F), 15, 16, 17
MALLARD (*rescue vessel*)

Pearl Harbour Base. Squad. on IV.
SEAGULL } *tenders* WIDGEON (*rescue vessel*)
BEAVER }
S/m. Div. 7. S 1, 18, 22, 23 (F), ARGONAUT
S/m. Div. 8. S 25, 27, 28 (F), 29
S/m. Div. 9. S 30, 31, 32, 34 (F)
S/m. Div. 11. S 44 (F), 45, 47
Reserve Div. 14. S 19, 21, 24, 26, 33, 35, 42, 43, 46
S/m. Div. 12. BARRACUDA, DOLPHIN, NARWHAL, NAUTILUS (F), S 20 (*temporarily*), BASS, BONITA (*both in reserve*)
HOLLAND (*tender*) ORTOLAN (*rescue vessel*)

BASE FORCE
ANTARES (*flag*)

Train. Squadron I.
UTAH (*flag*)

BOBOLINK	VIRCO	CONTOCOOK
ROBIN	BRIDGE	
RAIL	BRAZOS	

Squadron II.
ARGONNE (*flag*)

BRANT	PINOLA	RELIEF
PARTRIDGE	CUYAMA	SONOMA
KINGFISHER	NECHES	ALGORMA
TERN	ARCTIC	MEDUSA

Aircraft Base Force.
WRIGHT (*flag*)

TEAL	PELICAN	GANNET
LAPWING	AVOCAT	SANDPIPER

ASIATIC FLEET
HOUSTON (*flag, until relieved by* AUGUSTA)

ASHEVILLE	ISABEL	SACRAMENTO	TULSA
Yantgze Patrol.		*S. China Patrol.*	
LUZON (F)		MINDANAO (F)	
TUTUILA		FULTON	
PANAY			
OAHO			
GUAM			
MONOCACY			
PALOS			

Destroyers. Squadron V.
PAUL JONES (F)
BLACK HAWK (*tender*)

Div. 13.	*Div.* 14.	*Div.* 15.
SMITH THOMPSON (RF)	PARROTT	POPE
	EDSALL	PEARY (F)
BARKER	BULMER (RF)	PILLSBURY
J. D. EDWARDS	STEWART (F)	JOHN D. FORD (RF)
WHIPPLE (F)		

Submarines Squad. on V.
CANOPUS (*flag*)
S/m. Div. 10. S 36, 37 (F), 38, 39, 40, 41
PIGEON (*rescue vessel*)

Minecraft. *Div.* 3.
FINCH
BITTERN

Aircraft Detachment.
HERON (*tender*)
PECOS (*auxiliary*)

Special Service Squadron.
RICHMOND
J. FRED TALBOT
JACOB JONES

MISCELLANEOUS

Naval Transport Service.

CHAUMONT	NITRO	SALINAS
HENDERSON	VEGA	RAMAPO

Special Duty.

CORMORANT : (Bureau of Ordinance)	WANDANK : 1st District
GOLD STAR: Station Slip, Guam	SAGAMORE : 3rd ,,
GREBE : Navy Dept.	KALMIA 4th ,,
HANNIBAL : Survey	KEWAYDIN } 5th ,,
NOKOMIS : Survey	OWL : }
ONTARIO : Stationaire at Tutuila	KOKA : 11th ,,
PENGUIN : Guam	SWALLOW : 13th ,,
WOODCOCK : Guantanamo	SUNNADIN : 14th ,,
	CONSTITUTION : Navy Dept.
	UMPQUA : 6th District

SUMMARY OF NAVAL FORCES, Nov. 1933.

	Building	*Under Age*	*Over Age*
BATTLESHIPS	—	15	—
BATTLE CRUISERS	—	—	—
HEAVY CRUISERS	7	10	—
CRUISERS	4	10	—
CARRIERS	3	3	—
DESTROYERS	32	14	169
SUBMARINES	6	53	29
HEAVY MINE LAYERS	—	2	—
LIGHT MINE LAYERS	—	12	—
GUNBOATS, PATROL SHIPS	2	14	—
RIVER GUNBOATS	—	8	—
S/M. CHASERS	—	50	—
MINE SWEEPERS	—	43	—
TARGET SHIP	—	1	—
TRAINING SHIP	—	1	—
DEPOT SHIPS, TENDERS, STORESHIPS	—	33	—

(1919 & 1917) BATTLESHIPS—FIRST LINE (BB).

(Maryland Class—3 Ships.)

COLORADO (March 22nd, 1921), **MARYLAND** (March 20th, 1920), and **WEST VIRGINIA** (Nov. 19th, 1921).

Standard displacement, 32,500 tons.* *Full load*, 33,590 tons. Complement, 1407.

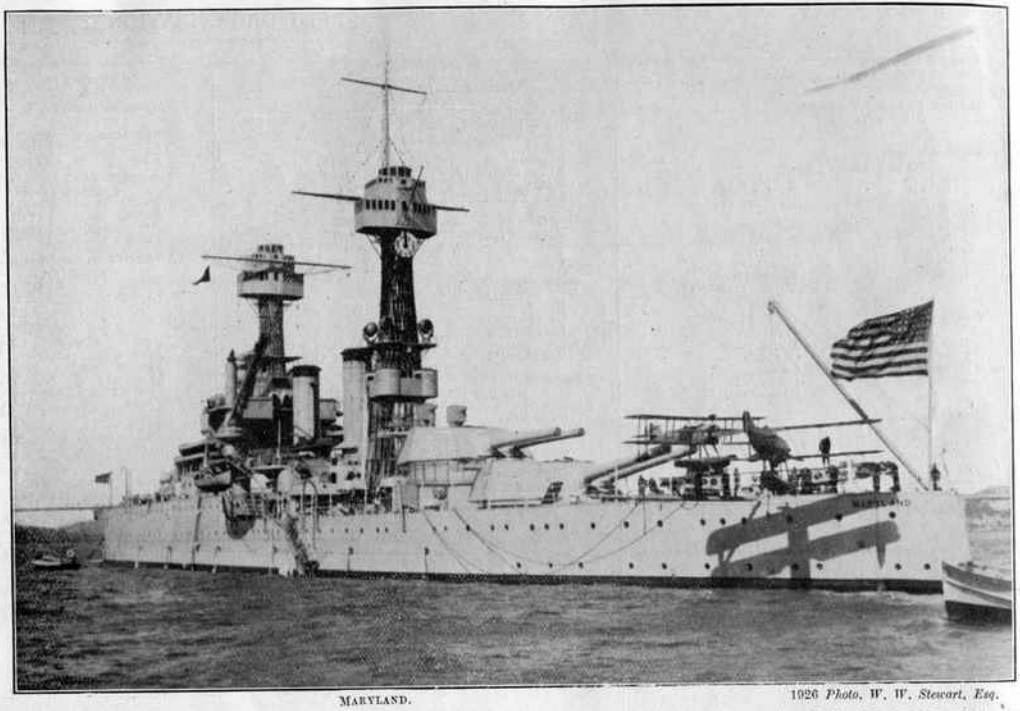
Length (*w.l.*), 600 feet. (*o.a.*), 624 feet.
Beam, 97 feet 3½ inches.
Mean draught, 30½ feet.
Max. „ 31 ft. 3½ in.

Complement of *W. Virginia* as fleet flagship, 1486.

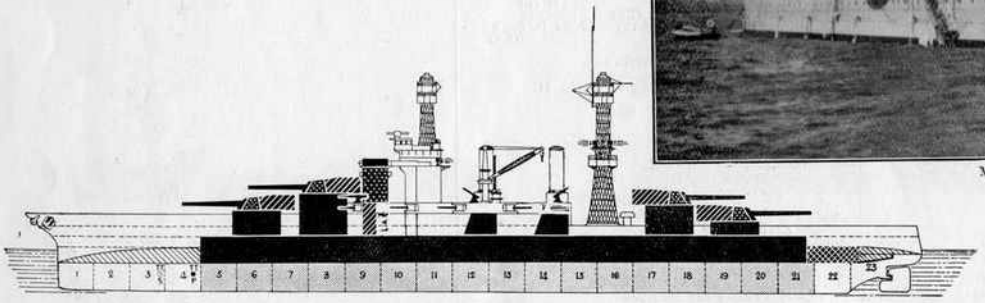
Guns (**Dir. Con.**):
8—16 inch, 45 cal. Mk. I.
12—5 inch, 51 cal.
8—5 inch (A.A.) Mk. X.
4—6 pdr. (saluting).
2—1 pdr.
2 M.G.
2 landing.
Torpedo tubes (21 inch):
2 *submerged*.

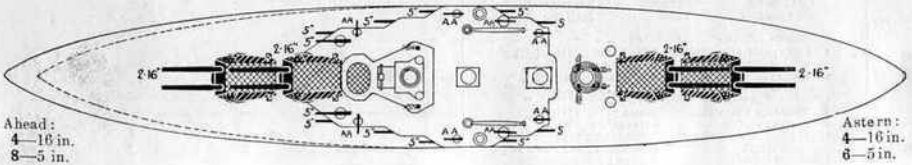
Armour:
16″—14″ Belt.....
8″ Belt (aft).....
3″ Deck (ends).....
16″—9″ Funnel bases ...
18″—9″ Turrets.....
16″ Conning tower and tube.....

* *Maryland*, 31,500. *W. Virginia*, 31,800 tons.



Maryland. 1926 *Photo, W. W. Stewart, Esq.*





Ahead:
4—16 in.
8—5 in.

Astern:
4—16 in.
6—5 in.

Broadside: **8**—16 inch, **7**—5 inch, **1**—21 inch torpedo tube.

Machinery: In *Colorado* Westinghouse turbines and electric drive; in *Maryland* and *W. Virginia*, G.E. turbines with electrical drive. Designed S.H.P. 28,900 = 21 kts. cf. trials. 4 screws. Boilers: 8 Babcock & Wilcox. Fuel (oil only): *normal* 2500 tons; *maximum* 4000 tons (unofficial figures).

Gunnery Notes.—16 inch are a new model, successfully proved at Indian Head, 1917. Maximum elevation 30°; Maximum range at this elevation unofficially stated to be 33,300 yards. Turrets electrically manœuvred and with electric hoists. Excepting increase of calibre to 16 inch, otherwise as Notes for *Tennessee* Class on page 470. **2**—5 inch guns removed 1922, and **4**—3 inch guns added. New director system installed, 1923. Main control is at a height of 120 feet above sea level.

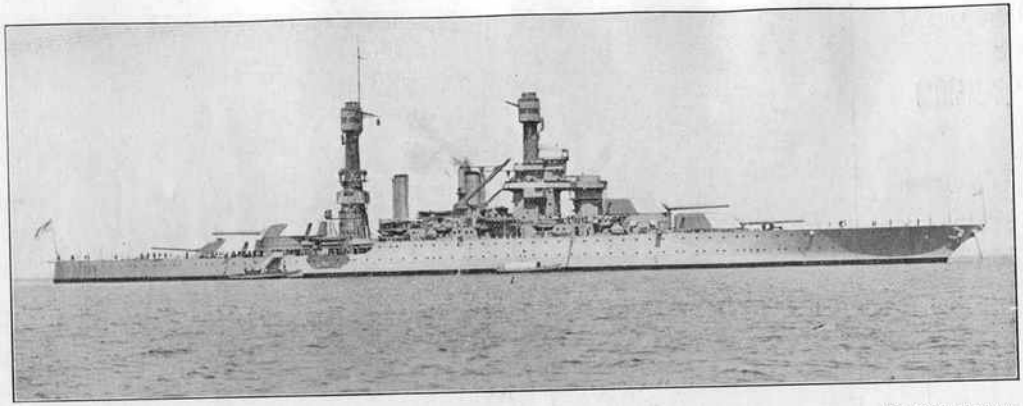
Armour Notes. } As for *California* and *Tennessee*.
Appearance Notes. }

Anti-Torpedo Protection.—Ferrati type triple hull and minute internal subdivision by longitudinal and transverse unpierced bulkheads.

Engineering Notes.—"Electric Drive" is identical with that for *California* Class (p. 470), but, in these ships, electric installation has been extended. Part of steam generated in boilers is diverted for running six auxiliary turbo-generators, supplying current to anchor gear, workshop lathes, refrigerating plant, bakeries, &c. Guns are also electrically manœuvred, ammunition hoists are electric. In fact, every possible item of equipment, even down to potato peelers and ice-cream freezer is run by electric power. Estimated weight of machinery, 2002 tons. Heating surfaces as *Tennessee* on page 470.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*	*Best recent speed*
Colorado	New York S.B. Co.	Westinghouse Co.	May '19	Aug. '23	37,400 = 20·67	Babcock	21
Maryland	Newport News	Gen. Elec. Co.	Apl., '17	July '21	36,167 = 21·1	Babcock	
W. Virginia	Newport News	Gen. Elec. Co.	Apl., '20	Dec. '23		Babcock	

General Notes.—Authorised 1916 as *No. 45* (*Colorado*), *No. 46* (*Maryland*), and *No. 48* (*W. Virginia*). *W. Virginia* and *Maryland* both fitted as Flagships. Except for change in primary armament, and slight increase in displacement, they are identical in nearly all respects with *California* class. *Washington* scrapped under Naval Treaty. Catapult has been added to equipment of each of this class.

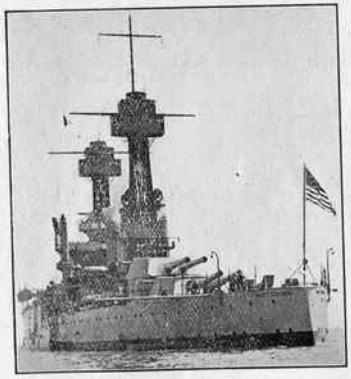


West Virginia.

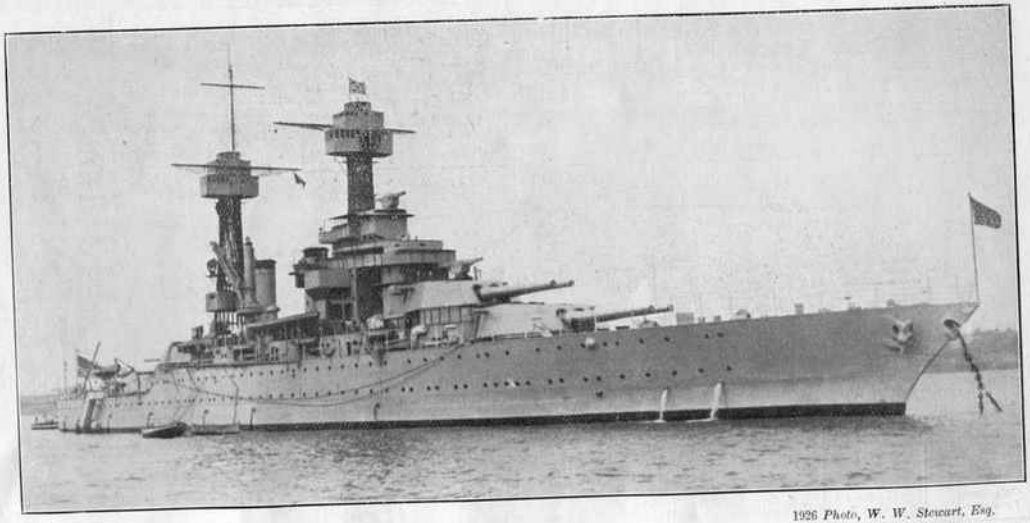
1924 *Photo, Abrahams.*

W. Virginia.—bow view.

1924 *Photo, Abrahams.*



W. Virginia 1924 *Photo, Abrahams.*



Maryland.

1926 *Photo, W. W. Stewart, Esq.*

(California *class*—2 ships.)

CALIFORNIA (Nov. 20th, 1919) and **TENNESSEE** (April 30th, 1919).

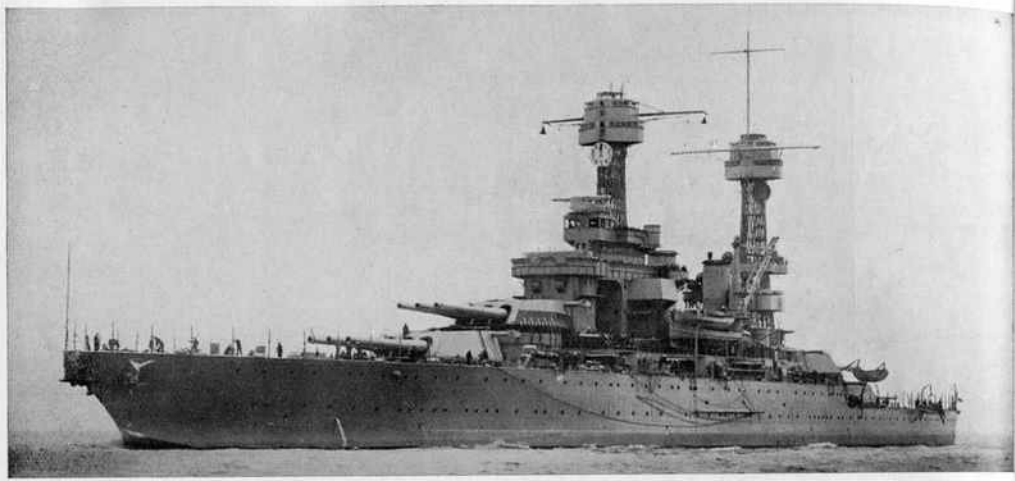
Displacement { *Standard* 32,600 tons.§ / *Full load*, 33,190 tons } Complement, 1407.*

Length { (*w.l.*) 600 feet. / (*o.a.*) 624 feet. } Beam, 97 feet 3½ inches. { *Mean* draught, 30¼ feet / *Max.* „ 31 feet }

* As Flagship, 1469.
§ Tennessee 32,300 tons.

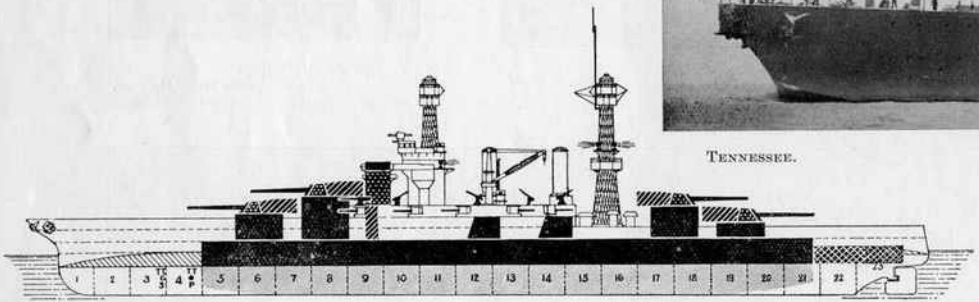
Guns (**Dir. Con.**):
12—14 inch, 50 cal., Mk. IV.
12—5 inch, 51 cal.
8—5 inch 25 cal. AA.
4—6 pdr. (saluting).
2 —1 pdr.
2 M.G.
2 landing.
Torpedo tubes (21 inch):
2 *submerged*.

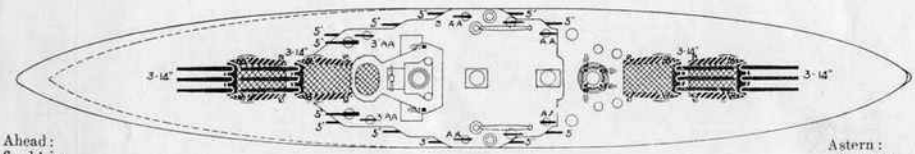
Armour:
14" Belt ....
8" Belt (aft) ....
3" Deck (ends) ....
15"—9" Funnel bases ...
18"—9" Turrets....
16" Conning tower and tube ....



Tennessee.

1921 *Copyright Photo. O. W. Waterman.*





Ahead:
6—14 in.
6—5 in.

Astern:
6—14 in.
6—5 in.

Broadside: **12**—14 in. **6**—5 in.; **1**—21 in. torpedo tube.

Machinery: *California*, G. E. turbines with electric drive. *Tennessee*, Westinghouse turbines with electric drive. 4 screws in both ships. Boilers: 8 Express Bureau type in *California*, 8 Babcock in *Tennessee*. Designed H.P. 28,500=21 kts. Fuel (oil only): *normal* 2,200, *maximum* 3,328 tons.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Refit*	*Trials*	*Boilers*	*Best recent speed*
California	Mare Island Y.	G. E. Co.	Oct.'16	Aug.'21		21·46	Express	
Tennessee	New York Yard	Westinghouse Co.	May.'17	June'20		30,908=21·01	Babcock	

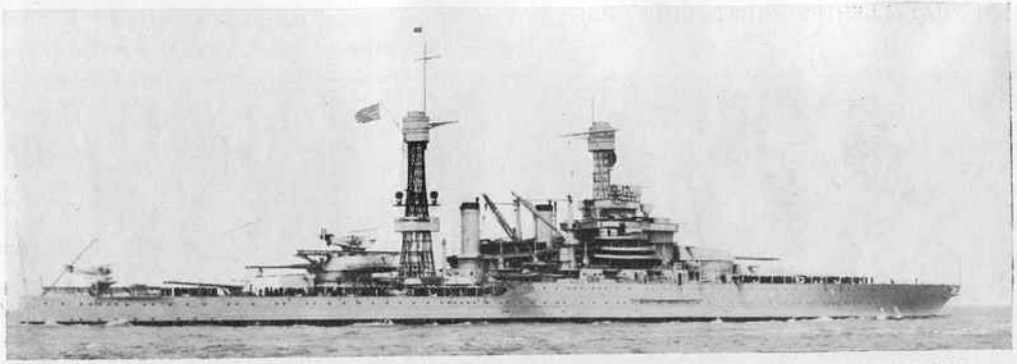
General Notes.—Authorised 1915 as *No.* 43 (*Tennessee*) and 44 (*California*). The above design is practically identical with *New Mexico* class on next page. *California* fitted as Flagship.

**Gunnery Notes.*—The 14 inch mounted in separate sleeves; elevation, up to 30°. Maximum range stated to be over 35,000 yards. Main guns controlled from upper storey and 5 inch from lower storey of masthead tops.

**Armour Notes.*—Generally as *New Mexico*, *Pennsylvania* and *Nevada* classes on subsequent pages. Internal subdivision by unpierced bulkheads developed to the utmost degree below waterline.

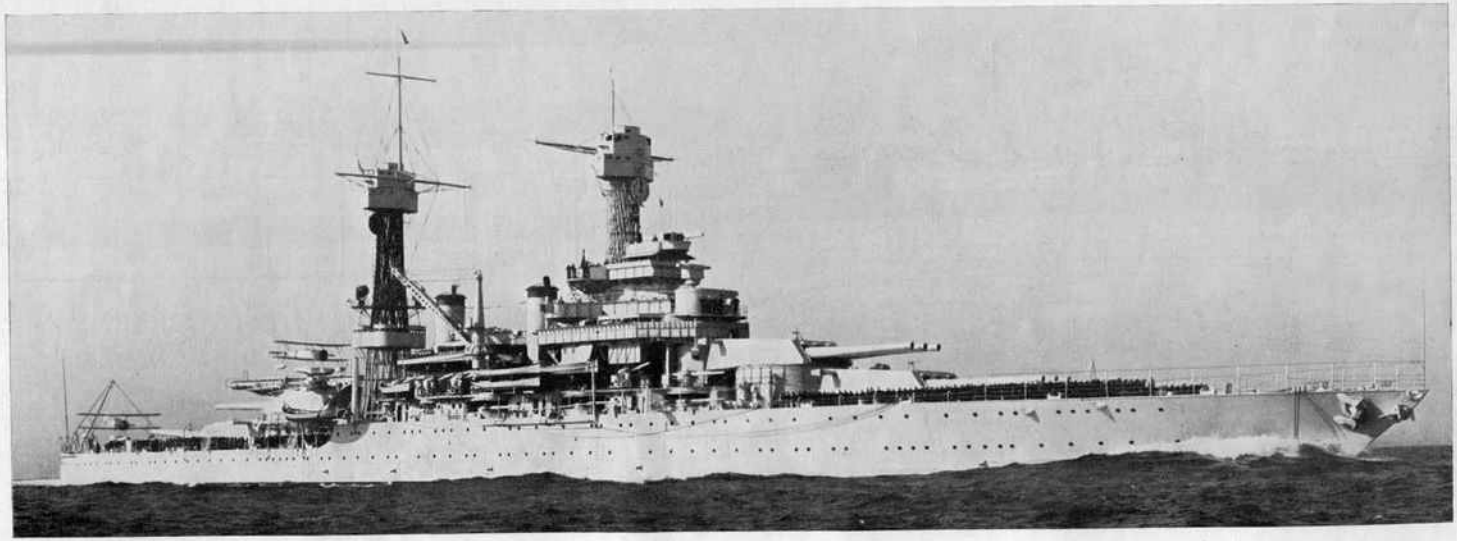
Engineering Notes.—Generally as those relating to *New Mexico* on page 472, but (*a*) current generated is 3-phase, (*b*) turbine speed is controlled by hydraulic governors instead of mechanical, (*c*) controls are located in one small room. Four alternating current motors, one to each propeller shaft, supplied by current at 3400 volts, from 2 turbo-generators. Motors are wound for 26 and 24-pole connections, operating on former as squirrel-cage machines, and on latter as wound-rotor machines. Oil for trials: 1467 tons and 187 tons feed water. Estimated weight of machinery: *California*, 1805 tons; *Tennessee*, 2045 tons. Heating surface: 50,984 sq. ft. for Express Bureau boilers in *California*; 41,768 sq. ft. + 4,168 sq. ft. (superheated) for Babcock boilers in *Tennessee*. Each boiler is in a separate w.t. compartment. Boiler rooms are abeam of engine rooms (4 to port, 4 to starboard), and boilers are under central control. Turbines are in tandem on centre line. On *trials*, *Tennessee* brought to rest from full speed within 3 minutes; tactical diameter: 700 yards (full helm, both screws turning forward).

Aircraft Notes.—These ships now carry a catapult on third turret.



CALIFORNIA.

1930 *Official Photo.*



CALIFORNIA

1933 *Photo, O. W. Waterman.*

(1915) BATTLESHIPS—FIRST LINE (BB).

(New Mexico Class—3 ships.)

NEW MEXICO (April 23rd, 1917), **IDAHO** (June 30th, 1917),

MISSISSIPPI (January 25th, 1917).

Displacement* Standard { *New Mexico*, 30,000 tons. *Idaho*, 30,800 tons. *Mississippi*, 30,100 tons. } Complement, 1434.

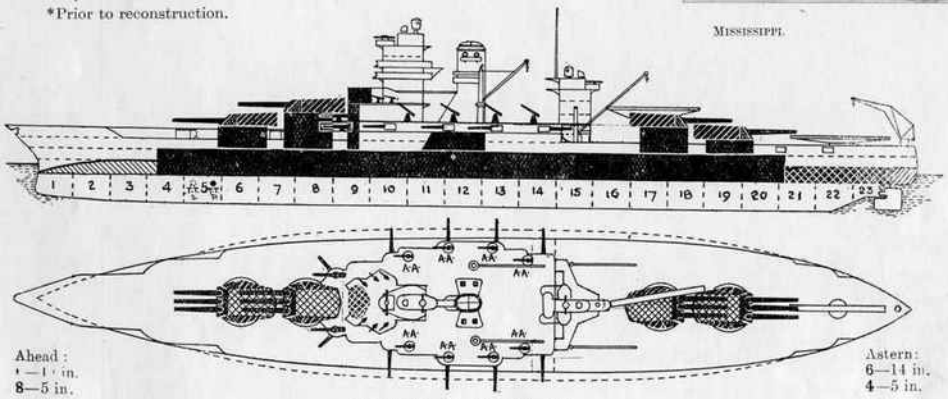
Length { *waterline*, 600 feet. *over all*, 624 feet. } Beam, 97 ft. 4½ in. { *Mean* draught, 30 feet. *Max.* „ 31ft. 0½in. }

Guns (**Dir. Con.**):
- **12**—14 inch, 50 cal., Mk. IV.
- **12**—5 inch, 51 cal.
- **8**—5 inch (**AA.**), 25 cal.
- **4**—3 pdr. (saluting).
- **2**—1 pdr.
- **2** machine.
- **1** landing.

Torpedo tubes removed.

*Prior to reconstruction.

Armour:
- 14″ Belt (amidships) .....
- 8″ Belt (aft) .....
- ″ Deck ends .....
- 15″—9″ Funnel base .....
- 18″—9″ Turrets
- 16″ Conning tower & tube



Ahead:
- —14 in.
- **8**—5 in.

Astern:
- **6**—14 in.
- **4**—5 in.

Broadside: **12**—14 in., **6**—5 in.

Machinery: Westinghouse Parsons Turbines being fitted in all three ships. 4 screws. Boilers: 9 Babcock & Wilcox. Designed H.P., *New Mexico* 27,500, others 32,000=21 knots. Fuel: Oil only, 2,200 tons (pre-alterations figures).

Mississippi. 1933 *Photo, Official.*

Armour and Gunnery Notes.—Generally as *Pennsylvania* and *Nevada* classes, but have still greater degree of interna protection. Belt reaches to 2 ft. above w.l. at stern. As designed, it was intended they should mount 14 in. 45 ca guns, but while building, the more powerful 50 calibre model of the 14 inch gun was adopted. In this (and a newer ships) triple turret guns mounted in separate sleeves. Elevation reported to be increased to 30°.

Name	*Builder and Machinery*	*Laid down*	*Completed*	*Trials (4 hrs)*	*Tons Fuel per day* 10—	15—	19—kts.	*Best recent speed*
New Mexico	New York Yard	Oct., '15	May, '18	31,'97=21·08	—	132	265	21
Idaho	N. York S.B. Co.	Jan., '15	Mar., '19	33,100=21·29	—/74	165/194	—/10	21·92
Mississippi	Newport News	Apl., '15	Dec., '17	31,804=21·09	77	—/168	—/305	

General Notes.—Authorised 1914, as *No. 40 (New Mexico)*, *41 (Mississippi)* and *42 (Idaho)*. ***New Mexico*** fitted as Fleet Fla ship. Originally, only two ships were to have been built, but the sale of the old ***Idaho*** and ***Mississippi*** to Gree contributed two-thirds of the cost for a third unit. ***New Mexico*** was first named ***California***. The type is deriv from the ***Nevada*** design through the ***Pennsylvania*** class, upon which all the above are improvements. T electrical transmission of ***New Mexico*** was adopted through the excellent results given by the Melville-Macalpi electric-drive system in the Aircraft Carrier ***Langley***. A Bill authorising the appropriation of $30,000,000 for modern ing these ships has been approved by the House Naval Committee. Displacement will be increased by about 2,0 tons. They are to undergo extensive alterations which include the fitting of bulges, increased protection, alterati to the secondary battery, changes in the elevation of the main armament, new masts, bridges and machinery. *Mexico* was formerly fitted with turbo-electric drive, which proved entirely successful, but is being replaced by high powered machinery identical with that which is being installed in her sisters, for the purposes of homogeneity a economy. Approximately 300,000 dollars will be saved by equipping all three ships with the same type of turbi machinery.

(1915) BATTLESHIPS—FIRST LINE (BB).

(New Mexico Class—3 ships.)

NEW MEXICO (April 23rd, 1917), **IDAHO** (June 30th, 1917),

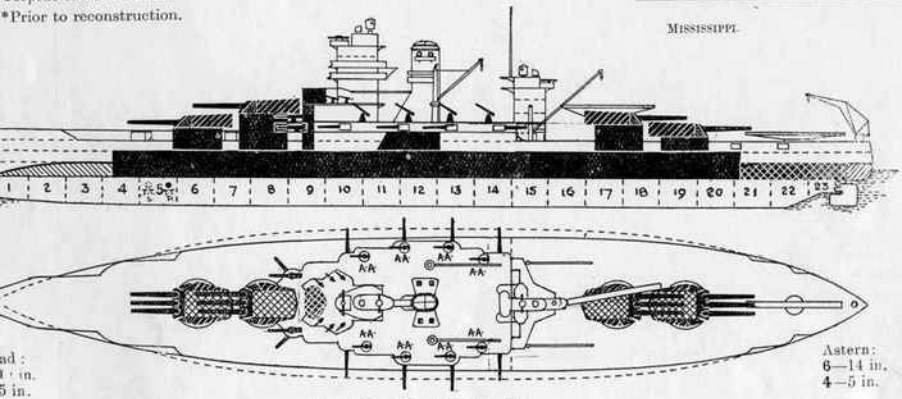
MISSISSIPPI (January 25th, 1917).

ement* (*New Mexico*, 30,000 tons. / *Idaho*, 30,800 tons. / *Mississippi*, 30,100 tons.) Complement, 1434.

(*waterline*, 600 feet. / *over all*, 624 feet.) Beam, 97 ft. 4½in. (*Mean* draught, 30 feet. / *Max.* „ 31ft. 0½in.)

Dir. Con.):
12—14 inch, 50 cal., Mk. IV.
12—5 inch, 51 cal.
8—5 inch (AA.), 25 cal.
4—3 pdr. (saluting).
2—1 pdr.
2 machine.
1 landing.
Torpedo tubes removed.
*Prior to reconstruction.

Armour:
14″ Belt (amidships) .....
8″ Belt (aft) .....
″ Deck ends .....
15″—9″ Funnel base .....
18″–9″ Turrets
16″ Conning tower & tube



ad:
in.
5 in.

Broadside: **12**—14 in., **6**—5 in.

Machinery: Westinghouse Parsons Turbines being fitted in all three ships. 4 screws. Boilers: 9 Babcock & Wilcox. Designed H.P., *New Mexico* 27,500, others 32,000=21 knots. Fuel: Oil only, 2,200 tons (pre-alterations figures).

Mississippi.

1933 *Photo, Official.*

Armour and Gunnery Notes.—Generally as *Pennsylvania* and *Nevada* classes, but have still greater degree of internal protection. Belt reaches to 2 ft. above w.l. at stern. As designed, it was intended they should mount 14 in. 45 cal. guns, but while building, the more powerful 50 calibre model of the 14 inch gun was adopted. In this (and all newer ships) triple turret guns mounted in separate sleeves. Elevation reported to be increased to 20°.

Name	*Builder and Machinery*	*Laid down*	*Completed*	*Trials (4 hrs.)*	*Tons Fuel per day* 10—	15—	19—kts.	*Best recent speed*
New Mexico	New York Yard	Oct., '15	May, '18	31,797=21·08	—	132	263	21
Idaho	N. York S.B. Co.	Jan., '15	Mar., '19	33,100=21·29	—/74	165/194	—/ 10	21·92
Mississippi	Newport News	Apl., '15	Dec., '17	31,804=21·09	77	—/168	—/305	

General Notes.—Authorised 1914, as *No. 40 (New Mexico)*, *41 (Mississippi)* and *42 (Idaho)*. *New Mexico* fitted as Fleet Flagship. Originally, only two ships were to have been built, but the sale of the old *Idaho* and *Mississippi* to Greece contributed two-thirds of the cost for a third unit. *New Mexico* was first named *California*. The type is derived from the *Nevada* design through the *Pennsylvania* class, upon which all the above are improvements. The electrical transmission of *New Mexico* was adopted through the excellent results given by the Melville-Macalpine electric-drive system in the Aircraft Carrier *Langley*. A Bill authorising the appropriation of $30,000,000 for modernising these ships has been approved by the House Naval Committee. Displacement will be increased by about 3,000 tons. They are to undergo extensive alterations which include the fitting of bulges, increased protection, alterations to the secondary battery, changes in the elevation of the main armament, new masts, bridges and machinery. *New Mexico* was formerly fitted with turbo-electric drive, which proved entirely successful, but is being replaced by higher powered machinery identical with that which is being installed in her sisters, for the purposes of homogeneity and economy. Approximately 300,000 dollars will be saved by equipping all three ships with the same type of turbine machinery.

(Pennsylvania Class—2 Ships).

PENNSYLVANIA (16th March, 1915) & **ARIZONA** (19th June, 1915).

Standard Displacement, Pennsylvania 33,100. Arizona 32,600 tons.

Length { *w.l.* 600 feet / *o.a.* 608 feet } Beam, 106 feet, 3 in. *Mean* draught, 28 feet.

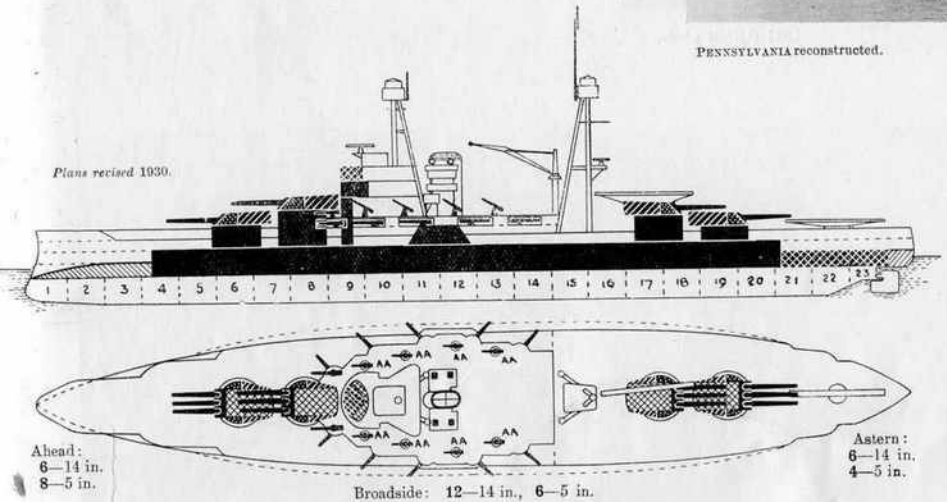
Complement, 1358.

Guns (**Dir. Con.**):
12—14 inch, 45 cal.
12—5 inch, 51 cal.
8—5 in. (AA.), 25 cal.
4—3 pdr. (saluting).
2—1 pdr.
2 M.G.
2 landing.
Torpedo tubes removed.

Armour:
14″ Belt (amidships) .....
8″ Belt (aft) .....
3″ Deck (ends) .....
15″—9″ Funnel base .....
18″—9″ Turrets
16″ Conning tower & tube ...
(Total, 8072 tons.)

Pennsylvania reconstructed. 1931 *Official photo.*

Plans revised 1930.



Ahead:
6—14 in.
8—5 in.

Astern:
6—14 in.
4—5 in.

Broadside: **12**—14 in., **6**—5 in.

Machinery: *Pennsylvania*, Curtis (geared cruising) turbines. 4 screws. *Arizona*, Parsons, (geared cruising) turbines. 4 screws. Boilers: 12 Babcock. Designed H.P. (*Pennsylvania*) 31,500; (*Arizona*) 34,000=21 kts. Fuel: oil only, *normal* 2,322 tons (694,830 gallons).

Armour Notes.—Generally as for *Nevada* class on page 463. Increase of armour weight due to increased internal p tection against submarine explosions and greater length of belt. Armour for each triple barbette, 220½ tons. *Ari* has cement backing to belt, instead of teak, and armoured fire-control tops.

Gunnery and Fire Control Notes.—14 inch guns mounted in single sleeve, and can be fired as one piece. *Max.* ra at 15° elevation reported to be 21,000 yards. Triple positions weigh about 650 tons each (guns, mountings armour). Hoists deliver 1 round per 40 secs., which may be improved to 2 rounds per minute, but three rou fired per turret per minute probably represents actual rate of fire in service. Breech blocks worked by hand po Interior of the shields to 14 inch guns very roomy and well arranged.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials Full Power: 12 hrs.*	*Tons Fuel per day* 10—	15—	19—
Pennsylvania	Newport News	Newport News	Oct.'13	June,'16	29,366=21·05	65/—	90/—	—
Arizona	New York Yard	New York Yard	Mar.'14	Oct. '16	34,000=21	76/—	167/174	—

General Notes.—*Pennsylvania* authorised 1912, as *No. 38*, *Arizona* 1913, as *No. 39*. Both ships are enlarged and impr *Nevadas*. They have proved excellent sea boats, very steady gun platforms, and have proved to be very econom ships. Their general design is marked by great simplicity and a very high standard of excellence. Living quarter very roomy and well ventilated. Both are fitted as Flagships.

These ships have undergone extensive reconstruction which has cost $14,800,000. Battery raised a deck and armament increased; tripods fitted, funnel moved further aft; bulges and increased internal protection; addit bridges, and catapults fitted.

In appearance differ from *Nevada* and *Oklahoma* in having higher conning tower and bridge which reaches fur nel

(1913) BATTLESHIPS—FIRST LINE (BB).

(Pennsylvania Class—2 Ships).

PENNSYLVANIA (16th March, 1915) & **ARIZONA** (19th June, 1915).

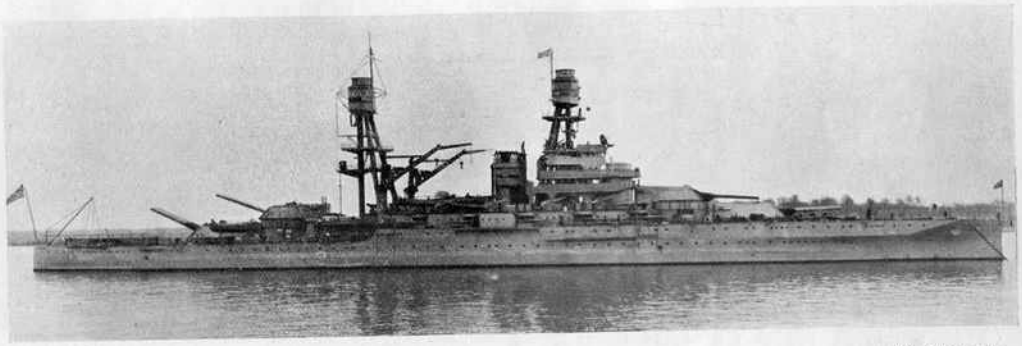
Standard Displacement, Pennsylvania 33,100. Arizona 32,600 tons.

Length { *w.l.* 600 feet / *o.a.* 608 feet } Beam, 106 feet, 3 in. *Mean* draught, 28 feet.

Complement, 1358.

Guns (**Dir. Con.**):
12—14 inch, 45 cal.
12—5 inch, 51 cal.
8—5 in. (AA.), 25 cal.
4—3 pdr. (saluting).
2—1 pdr.
2 M.G.
2 landing.
Torpedo tubes removed.

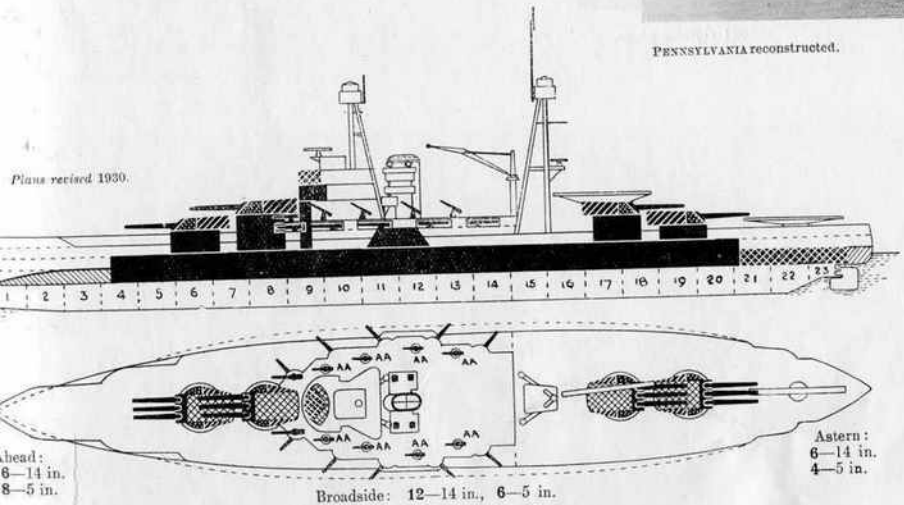
Armour:
14″ Belt (amidships) .....
8″ Belt (aft) .....
3″ Deck (ends) .....
15″—9″ Funnel base .....
18″—9″ Turrets
16″ Conning tower & tube ...
(Total, 8072 tons.)



Pennsylvania reconstructed.

1931 *Official photo.*

Plans revised 1930.



Broadside: **12**—14 in., **6**—5 in.

Astern:
6—14 in.
4—5 in.

Ahead:
6—14 in.
8—5 in.

Machinery: *Pennsylvania*, Curtis (geared cruising) turbines. 4 screws. *Arizona*, Parsons, (geared cruising) turbines. 4 screws. Boilers: 12 Babcock. Designed H.P. (*Pennsylvania*) 31,500; (*Arizona*) 34,000 = 21 kts. Fuel: oil only, *normal* 2,322 tons (694,830 gallons).

Armour Notes.—Generally as for *Nevada* class on page 463. Increase of armour weight due to increased internal protection against submarine explosions and greater length of belt. Armour for each triple barbette, 226½ tons. *Arizona* has cement backing to belt, instead of teak, and armoured fire-control tops.

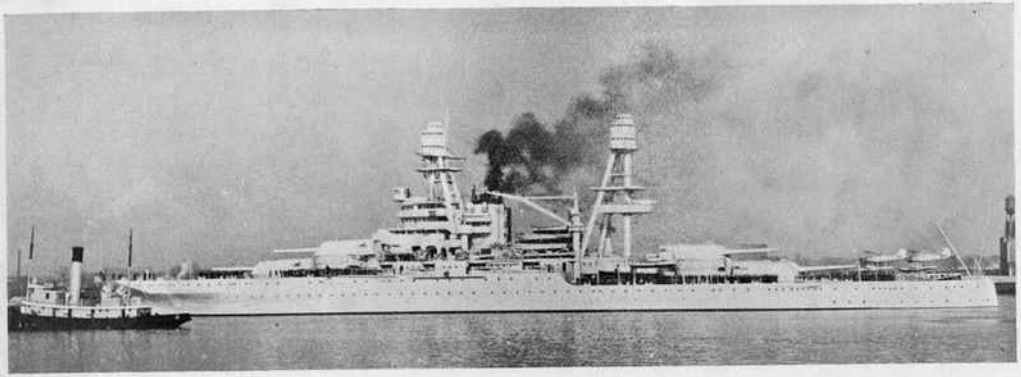
Gunnery and Fire Control Notes.—14 inch guns mounted in single sleeve, and can be fired as one piece. *Max.* range at 15° elevation reported to be 21,000 yards. Triple positions weigh about 650 tons each (guns, mountings and armour). Hoists deliver 1 round per 40 secs., which may be improved to 2 rounds per minute, but three rounds fired per turret per minute probably represents actual rate of fire in service. Breech blocks worked by hand power. Interior of the shields to 14 inch guns very roomy and well arranged.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials Full Power: 12 hrs.*	*Tons Fuel per day* 10—	15—	19—kts.
Pennsylvania	Newport News	Newport News	Oct.'13	June,'16	29,366 = 21·05	65/—	90/—	—/—
Arizona	New York Yard	New York Yard	Mar.'14	Oct.'16	34,000 = 21	76/—	167/174	—/309

General Notes.—*Pennsylvania* authorised 1912, as *No. 38*, *Arizona* 1913, as *No. 39*. Both ships are enlarged and improved *Nevadas*. They have proved excellent sea boats, very steady gun platforms, and have proved to be very economical ships. Their general design is marked by great simplicity and a very high standard of excellence. Living quarters are very roomy and well ventilated. Both are fitted as Flagships.

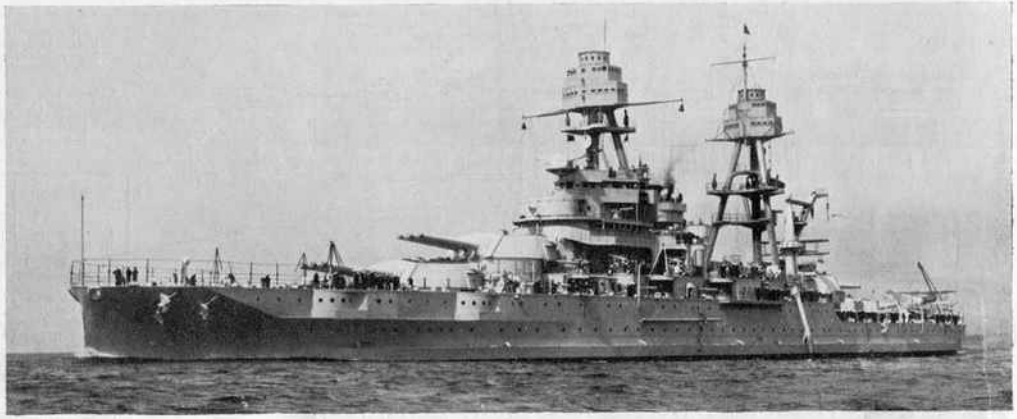
These ships have undergone extensive reconstruction which has cost $14,800,000. Battery raised a deck and AA. armament increased; tripods fitted, funnel moved further aft; bulges and increased internal protection; additional bridges, and catapults fitted.

In appearance differ from *Nevada* and *Oklahoma* in having higher conning tower and bridge which reaches funnel level.



ARIZONA.

1931 *Official photo.*



PENNSYLVANIA.

1933 *Photo. O. W. Waterman.*

(NEVADA CLASS—2 SHIPS).

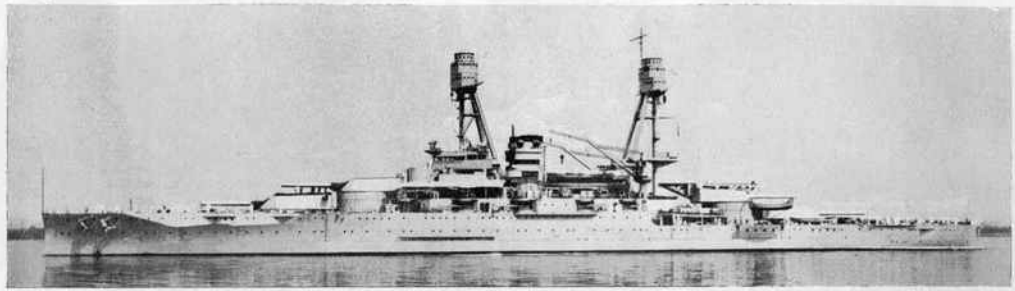
OKLAHOMA (March 23rd, 1914) & **NEVADA** (July 11th, 1914).

Standard Displacement 29,000 tons. Complement, both 1314.

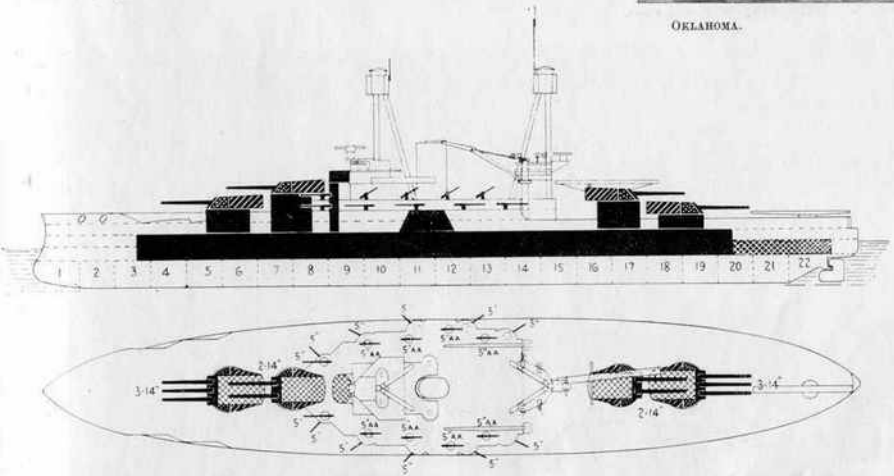
Length { *waterline*, 575 feet. / *over all*, 583 feet. } Beam, 107 ft. 11 in. *Mean* draught 27½ feet.

Guns (**Dir. Con.**):
10—14 inch, 45 cal.
12—5 inch, 51 cal.
8—5 inch, 25 cal. AA.
4—6* or 3† pdr. (saluting).
2—1 pdr.
2 machine.
1 landing.
Torpedo tubes removed.
*In *Nevada*. †In *Oklahoma*.

Armour:
13½" Belt (amidships) .....
8" Belt (aft) .....
13½" Bulkheads .....
13½" Funnel base .....
3" Deck (ends) .....
18"—9" Triple turrets .. }
16"—9" Double turrets .. }
16" Conning tower and tube .....
(Total weight, 7664 tons.)



OKLAHOMA. 1930 *Official photo.*



Ahead:
5—14 in.
8—5 in.

Broadside: **10**—14 in., **6**—5 in.

Astern:
5—14 in.
4—5 in.

Machinery: *Oklahoma*, Triple expansion, 4 cylinder; *Nevada*, Curtis (geared cruising) turbines. 2 screws in both. Boilers: *O*, 12 Babcock; *N*, 12 Yarrow. Designed H.P. 26,500=20·5 kts. Fuel: oil, 598,400 gallons (2000 tons), *maximum capacity*. Radius of action: 4000 miles at full speed, 10,000 miles at 10 kts.

Special Note:

The alterations effected to *Oklahoma* and *Nevada* include substitution of tripod for cage masts, and installation of a deck house, on which, **8**—5 inch, 25 cal. guns are mounted. The 5 inch 51 cal. torpedo defence battery is raised from the main deck to the forecastle deck. The funnel is moved aft slightly. Cost of alterations $7,000,000 per ship.

**Armour Notes.*—Main belt is 400 feet long by 17½ feet wide; 8½ feet of it being below *l.w.l.* Lower edge is 8". The ends are unarmoured; the battery also. Plates are applied in vertical strakes. Two protective decks, upper 3" flat, lower 1½" flat, 2" on slopes. Barbette bases are 13½" thick, but turrets are only 4½" where below protective deck and behind belt. Barbette shields: 18" port plate for triple positions, 16" port plate for twin positions, 10" sides, 9" back, 5" roof. Sighting slits in conning tower closed by splinter-proof shutters. There is a signalling station protected by 16" armour behind conning tower. These ships mark a new era in naval construction, being the first to embody the "everything or nothing" idea in the matter of protection. No bulkhead between 14 inch guns.

Gunnery Notes.—Guns in the triple turrets in one sleeve, can be fired as one piece. Elevation has been increased to 30°.

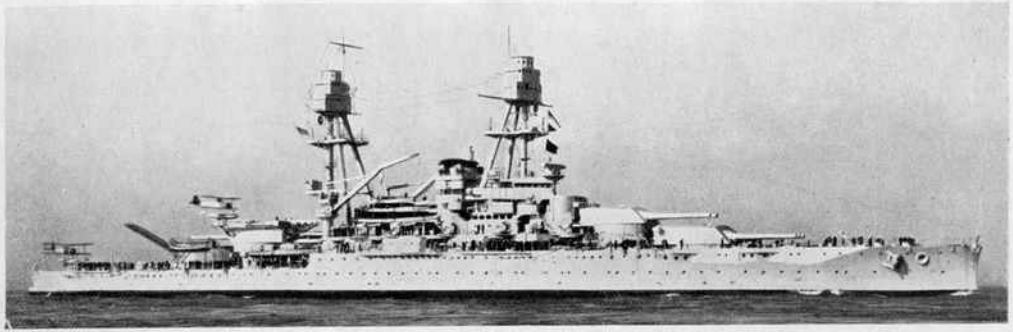
Engineering Notes.—*Nevada* has 2 H.P. and 2 L.P. Curtis turbines. Cylinders of *Oklahoma* are H.P. 36,5", I.P. 59.5", L.P. 12·78". Stroke, 48". Total heating surface, 45,080 sq. feet. Weight of machinery, *Nevada*, 1860 tons: *Oklahoma*, 1933 tons. Electric installation in both is 4 generating sets of 300 k.w., 125 volts, 2400 amp. each. Boilers are in 6 compartments and occupy less than 80 feet of length. Boilers are large tube "Express" type, those specially designed by Messrs. Babcock & Wilcox for *Oklahoma* proving most satisfactory. No superheaters in either ship. Electric-driven f.d. blowers proved too unreliable, and were replaced by steam turbine-driven blowers. All oil fuel carried in double bottom; no wing tanks.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials: (Full Power—12 hrs.)*	*Tons fuel per day: 10 kts.*	*15 kts.*	*19 kts.*
Oklahoma	N.York S.B.Co	N.Y. S.B. Co.	Oct. '12	May, '16	21,703=19·63	77	143	278
Nevada	Fore River Co.	Fore River	Nov. '12	Mar. '16	23,312=20·28	50·5† 77§	132·5† 149§	— 210§

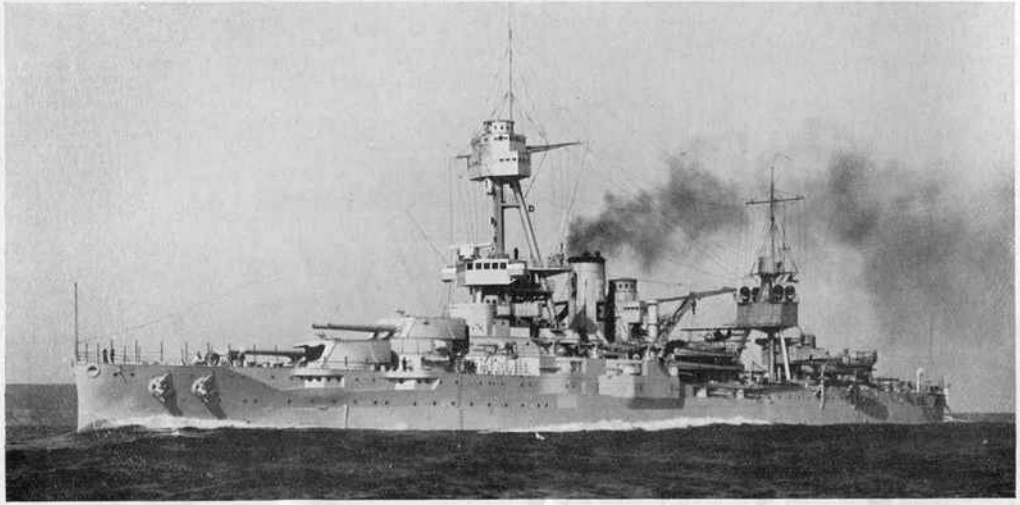
†Cruising turbines. §Main turbines.

General Notes.—Authorised 1911 as *No. 36* (*Nevada*), *37* (*Oklahoma*). Each carries a catapult astern

*Unofficial Notes.



NEVADA. 1933 *Photo, W. O. Waterman.*



NEW YORK. 1933 *Photo, W. O. Waterman.*

(Texas Class—2 Ships.)

NEW YORK (Oct. 30th, 1912) and **TEXAS** (May 18th, 1912).

Displacement, { *Standard*, 27,000 tons. / *Full load*, 30,000 tons. } Complement, 1507.

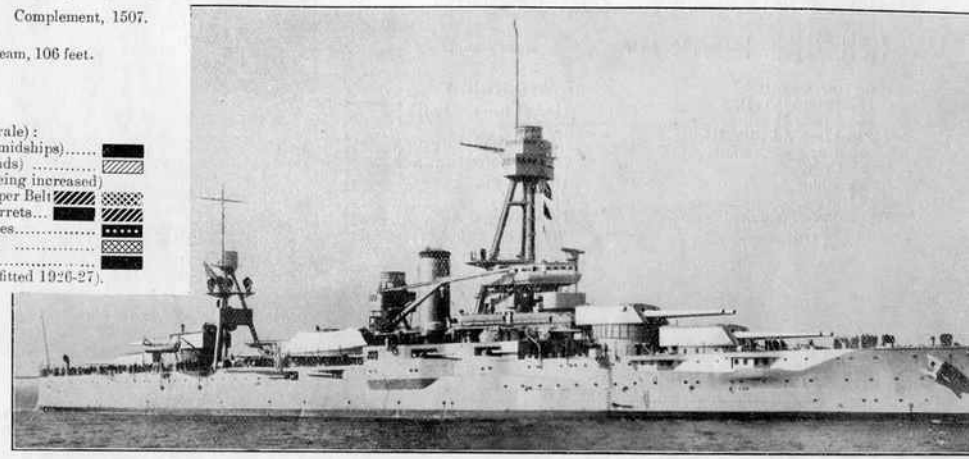
Length (*waterline*), 566 feet. / Length (*over all*), 573 feet. Beam, 106 feet.

Mean draught, 26ft.

Guns (**Dir. Con.**):
10—14 inch, 45 cal.
16—5 inch, 51 cal.
8—3 inch AA., Mk. III.
4—3 pdr. (saluting).
2—1 pdr.
2 M.G.
2 landing.
Torpedo tubes (removed).

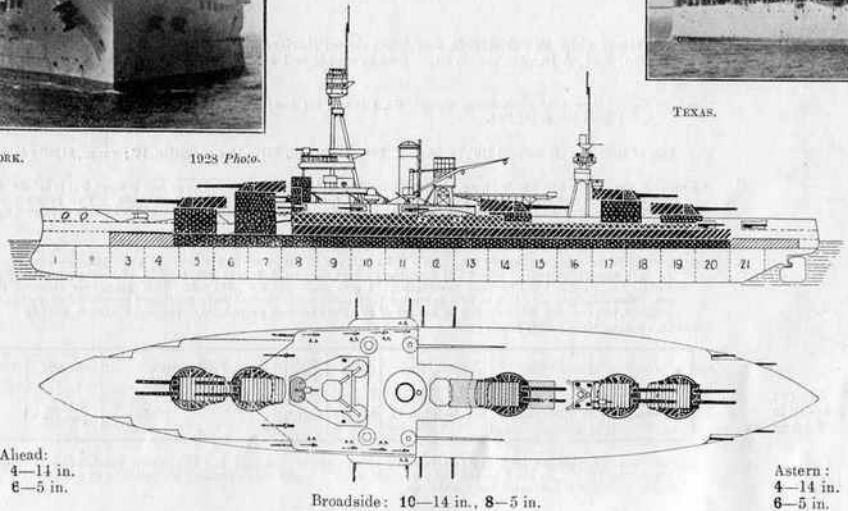
Armour (Midvale):
12" Belt (amidships).....
" Belt (ends) .....
3" Deck (being increased)
9"—6" Upper Belt
14"—8" Turrets...
12" Barbettes.....
6" Battery .....
12" C.T. .....
(Bulges fitted 1926-27).

New York. 1928 *Photo.*



Texas. 1927 *Official Photo*

Plans revised 1927



Ahead:
4—14 in.
6—5 in.

Broadside: **10**—14 in., **8**—5 in.

Astern:
4—14 in.
6—5 in.

Machinery: Vertical triple expansion, 4 cylinder. 2 screws. Boilers: 6 Bureau Express (37,020 H.S. and 6096 H.S. superheat). Designed H.P. 28,100 = 21 kts. Oil: 5200 tons.

The alterations effected in the Battleships of the *Arkansas*, *Texas* classes, include oil bu installation, anti-aircraft defence, increased underwater protection and improved aircraft handling arrangements. carry catapults. Displacement increased by nearly 3,000 tons.

Gunnery Notes.—New fire control system installed 1926 with tripod foremast.

Engineering Notes.—Builders of turbine engines in the U.S. refused to adopt the standards laid down by the Department. Accordingly, in these ships, reciprocating engines were reverted to, to show the turbine builder the Navy Department was determined to have turbines built to official specification, or else the older type of en would be taken up again. Cylinders: H.P. 39", I.P. 63", L.P. (2) 83". Stroke: 48". Weight of machinery: 1971 tons: N.Y. 2048 tons, both exclusive of electric lighting equipment. Electrical installation: 4 sets ea 300 k.w., 125 volts, 2400 amps., by General Electric Co. Both ships converted to oil burning.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials: Full Power.*	*Boilers*	*Bel rece spe*
Texas	Newport News	Newport News	Apl.'11	Mar.'14	19·77	Bureau	
New York	New York Yard	New York Yard	Sept.'11	Apl.'14	20·23	Express	

General Notes.—Authorised 1910 as *No. 34* (*N.Y.*) and *35* (*Texas*). Both ships fitted as flagships. Are very econo ships and most successful steamers. *Texas* cost *about* £2,194,000.

(Texas Class—2 Ships.)

NEW YORK (Oct. 30th, 1912) and **TEXAS** (May 18th, 1912).

Displacement, { *Standard*, 27,000 tons. / *Full load*, 30,000 tons. } Complement, 1507.

Length (*waterline*), 566 feet. / Length (*over all*), 573 feet. } Beam, 106 feet.

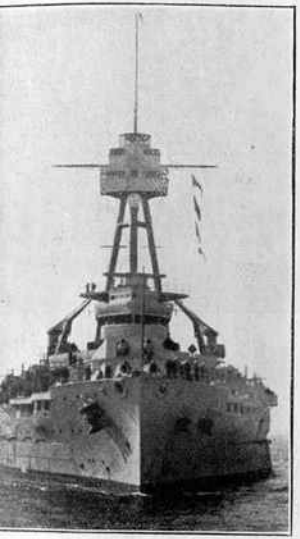
Mean draught, 26ft.

Guns (**Dir. Con.**):
- **10**—14 inch, 45 cal.
- **16**—5 inch, 51 cal.
- **8**—3 inch AA., Mk. III.
- **4**—3 pdr. (saluting).
- **2**—1 pdr.
- **2** M.G.
- **2** landing.

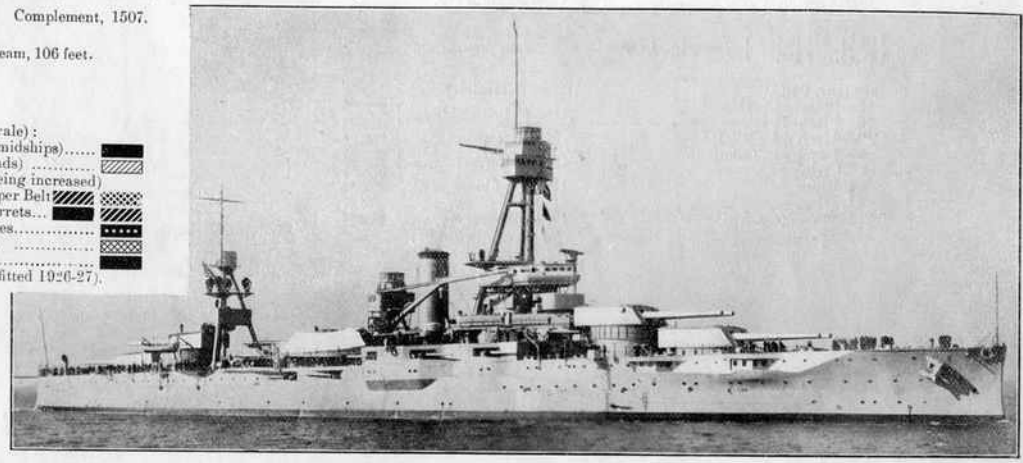
Torpedo tubes (removed).

Armour (Midvale):
- 12″ Belt (amidships)
- ″ Belt (ends)
- 3″ Deck (being increased)
- 9″—6″ Upper Belt
- 14″—8″ Turrets
- 12″ Barbettes
- 6″ Battery
- 12″ C.T.

(Bulges fitted 1926-27).



W YORK.

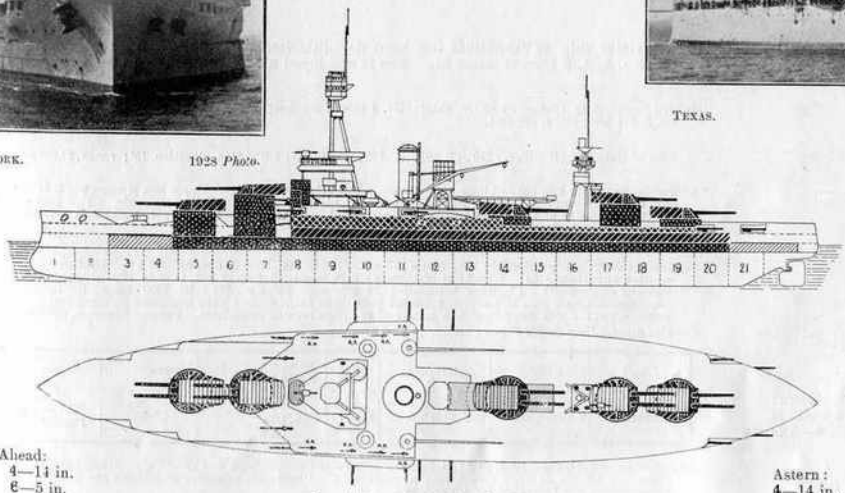


TEXAS.

1927 *Official Photo.*

Plans revised 1927

1928 *Photo.*



Ahead:
- 4—14 in.
- 6—5 in.

Astern:
- 4—14 in.
- 6—5 in.

Broadside: **10**—14 in., **8**—5 in.

Machinery: Vertical triple expansion, 4 cylinder. 2 screws. Boilers: 6 Bureau Express (37,020 H.S. and 6096 H.S. superheat). Designed H.P. 28,100 = 21 kts. Oil: 5200 tons.

The alterations effected in the Battleships of the *Arkansas, Texas* classes, include oil burning installation, anti-aircraft defence, increased underwater protection and improved aircraft handling arrangements. All carry catapults. Displacement increased by nearly 3,000 tons.

Gunnery Notes.—New fire control system installed 1926 with tripod foremast.

Engineering Notes.—Builders of turbine engines in the U.S. refused to adopt the standards laid down by the Navy Department. Accordingly, in these ships, reciprocating engines were reverted to, to show the turbine builders that the Navy Department was determined to have turbines built to official specification, or else the older type of engines would be taken up again. Cylinders: H.P. 39″, I.P. 63″, L.P. (2) 83″. Stroke: 48″. Weight of machinery: *Texas* 1971 tons: N.Y. 2048 tons, both exclusive of electric lighting equipment. Electrical installation: 4 sets each of 300 k.w., 125 volts, 2400 amps., by General Electric Co. Both ships converted to oil burning.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials: Full Power.*	*Boilers*	*Best recent speed*
Texas	Newport News	Newport News	Apl.,'11	Mar.,'14	19·77	Bureau	...
New York	New York Yard	New York Yard	Sept.,'11	Apl.,'14	20·23	Express	...

General Notes.—Authorised 1910 as *No. 34* (*N.Y.*) and *35* (*Texas*). Both ships fitted as flagships. Are very economical ships and most successful steamers. *Texas* cost *about* £2,194,000.

(1910) BATTLESHIPS—FIRST LINE (BB).

(Arkansas Class)

ARKANSAS (Jan. 14th, 1911).

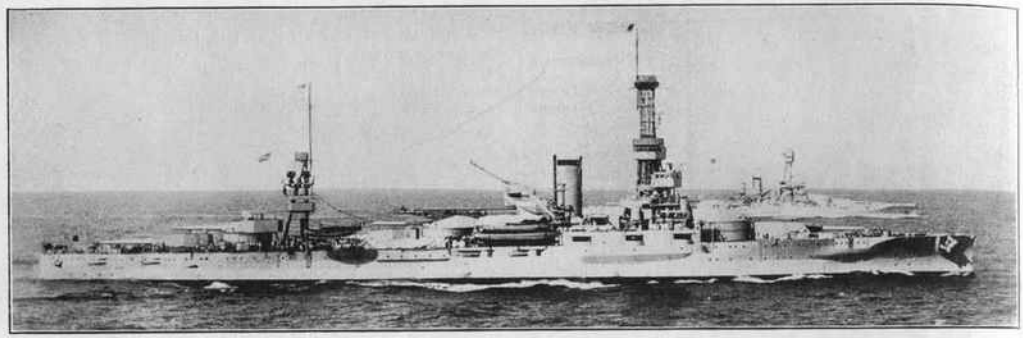
Displacement, { *Standard*, 26,100 tons. / *Full load*, 29,000 tons. } Complement, 1489.

Length { (*w.l.*), 554 feet. / (*o.a.*), 562 feet. } Beam, 106 feet. *Mean* draught, 26 feet.

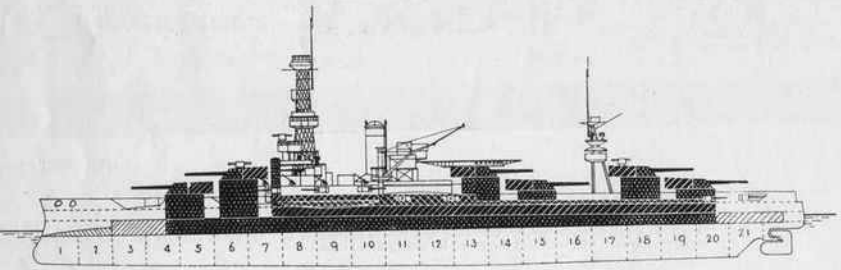
Guns (**Dir. Con.**):
12—12 inch, 50 cal.
16—5 inch, 51 cal.
8—3 inch AA., Mk III.
4—6 or 3 pdr. (saluting).
2—1 pdr.
2 machine.
2 landing.
Torpedo tubes (removed).

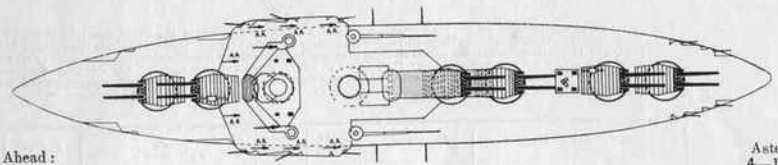
Armour (Midvale):*
11″—9″ Belt amidships
5″ Belt (ends)
12″—9″ Turrets
11″ Turret bases
6½″ Battery
12″ Conning tower
(Bulges fitted 1926-27)

*See Notes.



Arkansas (as modified by reconstruction). 1927 *Official Photo.*





Ahead:
4—12 in.
4—5 in.

Broadside: **12**—12 in., **8**—5 in.

Astern:
4—12 in.
6—5 in.

Machinery: I.P. and L.P. Parsons turbines, H.P. geared Curtis. 4 screws. Boilers: 4 White-Forster. Designed H.P. 28,000 = 20.5 kts. Oil: 5100 tons.

A sister ship **WYOMING** has been de-militarised according to the terms of the Naval Treaty. No. 3, 4, 5 turrets removed. She is employed as a Training Ship (see p. 497).

*Gunnery Notes.—Height of guns above water: No. 1 turret, 28½ feet; No. 2, 36½ feet; No. 3, 33 feet; No. 4, 25 feet; No. 5, 31½ feet; No. 6, 23½ feet.

Arcs of training: (1) 300°, (2) 270°, (3) 280°, (4) 260°, (5) 330°, (6) 300°. Max. elevation, 15°; range, 24,500 yds.

*Armour Notes.—Main belt 400 feet long, 9″ on bottom edge, 11″ on upper edge. Upper belt is same, but is 11″ on bottom edge and 6½″ on upper. Internal protection is by 1½″ high-tensile longitudinal bulkheads. Two protective decks over all machinery and magazine spaces, one deck at ends. 6½″ armour and 1½″ splinter bulkheads to funnel uptakes, up to main deck.

Engineering Notes.—Approximately 148 r.p.m.=10·5 kts., 215=15 kts., 300=20 kts., 320=22 kts. Heating surface: 45,000 sq. feet, superheat 436°. Weight of machinery: 2178 tons in *Arkansas*, 2095 tons in *Wyoming* (excluding electric lighting equipment). Electrical installation: 4 sets each 300 k.w., 125 volts, 2400 amps. by General Electric Co. Searchlights: 16. It was first intended that these ships should have combined turbines and reciprocating engines, but the plan was dropped in favour of complete turbine propulsion. Tactical Diameter, 800 yds.
(See also Special Note under *Texas* class).

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials (mean)*	*Boilers*	*Best recent speed*
Arkansas	N.Y.Shipbld. Co	N.Y. Shipbld. Co.	Jan.,'10	Sept.,'12	20·95	White-Forster	

General Notes.—Authorised 1909, as *33* (*Arkansas*). Contracts awarded Sept. and Oct., 1909. Freeboard: Forward, 25′; amidships, 19′ 2″; at No. 6 turret, 18′; at stern, 16′ 3″. Underwent extensive alterations and refit, 1925–27, when displacement was increased by 3,000 tons.

*Unofficial Notes.

AIRCRAFT CARRIERS—FIRST LINE.

YORKTOWN (*CV.* 5). (Newport News S.B. Co.). Ordered 1933.

ENTERPRISE (*CV.* 6). (Newport News S.B. Co.). Ordered 1933.

Displacement : 20,000 tons.

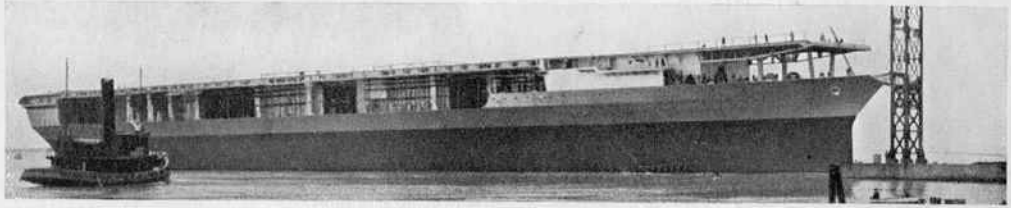
Guns : 5 inch.

RANGER (Newport News S.B. Co., Feb. 25, 1933).

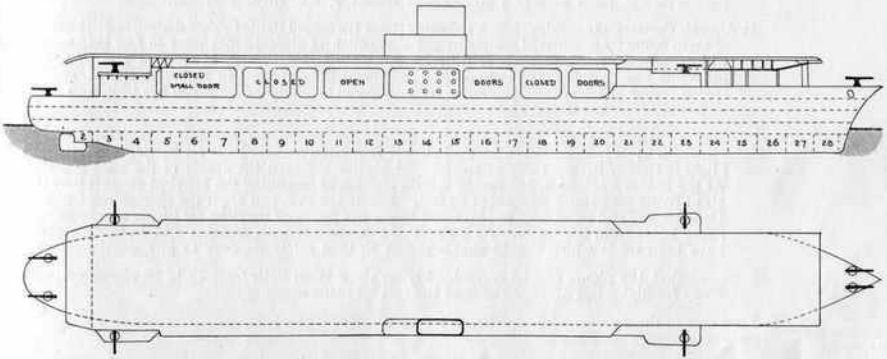
Displacement : 13,800 tons.

Dimensions : 727 (*w.l.*) × 80·2 × 19 feet.

Guns : **8**—5 inch AA.



1933 *Photo, Official.*



Machinery : Geared Turbines. S.H.P. 53,500. Boilers :

General Notes.—Laid down Sept. 26th, 1931. To be completed May, 1934. Original design provided for duct funnels aft as in *Langley*, but modifications to the plans were made in 1933 to allow for an island superstructure and funnel on the starboard side.

1933 *Photo, Offical.*

AIRCRAFT CARRIERS.—FIRST LINE.

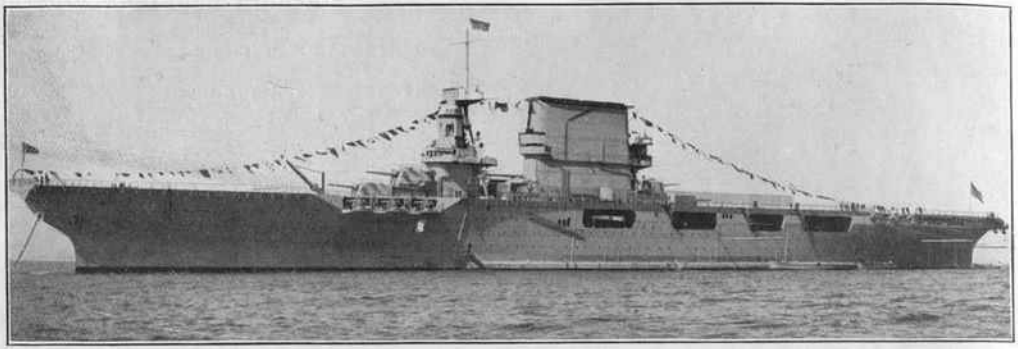
LEXINGTON (3rd Oct., 1925.)

SARATOGA (7th April, 1925.)

Displacement, 33,000 tons.

Complement (including flying personnel) 169 Officers, 1730 men.

Length (*p.p.*), 850 feet ; (*o.a.*) 888 feet. Beam, 106 feet (*extreme*). Draught, 24 feet 1½ inches (*mean*).



SARATOGA.

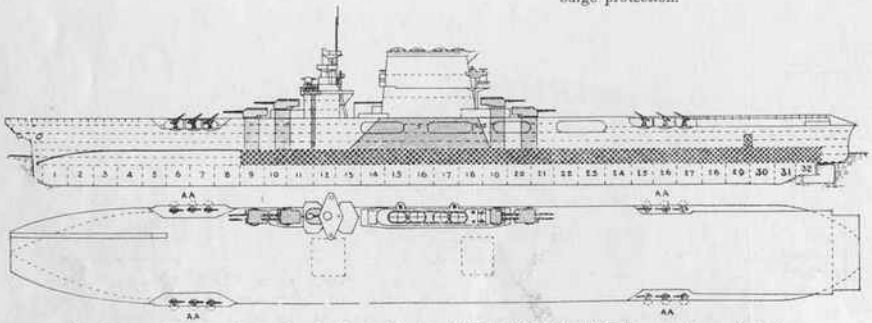
(Additional views on following page.)

1928 *Photo by favour of H. C. Bywater, Esq.*

Guns :
8—8 inch, 55 cal.
12—5 inch AA., 25 cal.
4—6 pdr. saluting.

Armour :
Unofficially reported to have 6" Belt, 600 feet in length, and 3" deck. Triple hull and bulge protection.

Plans revised 1930.



Machinery : G.E. Turbines, electric drive. Designed S.H.P. 180,000 = 33·25 kts. Boilers : *Lexington*, 16 Yarrow ; *Saratoga*, 16 White-Forster. 4 screws.

Name	*Builder*	*Machinery*	*Laid down*	*Completed*	*Trials*	*Boilers*
Lexington	Fore River S.B. Co.	Gen. Elec. Co.	8/1/21	Dec. '27	153,600 = 33·04	Yarrow
Saratoga	New York S.B. Co.		25/9/20	Nov. '27	158,375 = 33·42	White-Forster

Notes on Lexington and Saratoga.

These two ships were originally authorised in 1916 for construction as Battle Cruisers of 35,300 tons, with *seven* funnels and boilers disposed on two deck levels. After the War, and as a result of the lessons thereof, plans were to a large extent re-cast, v. F.S. 1919—1921 Editions.

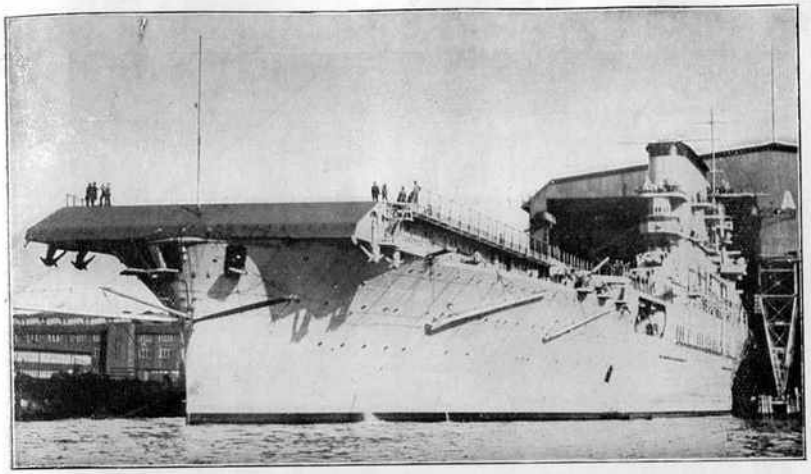
As Aircraft Carriers, these ships show a reduction (from the second Battle Cruiser design) in displacement of about 8,500 tons, achieved mainly by the elimination of eight 16-inch guns in four twin turrets, with mounts, armour, &c. It is believed the main belt protection is retained and that deck protection has been heavily reinforced. The general lines of the hull remain unaltered, and the special system of underwater protection is also adhered to. Flight deck is 880 feet long, from 85 to 90 feet in width, and 60 feet above waterline.

Handling of Aircraft.—The Landing Net is placed just before the recessed stern portion of the Flight Deck ; it is about 100 ft. long. Before it is a large T-shaped lift for moving aircraft from Flight to Hangar Deck. There is another and similar T-shaped lift abeam of the mast and C.T. At the bow is a catapult, 155 feet in length, capable of launching the heaviest aircraft into the air at flying speed with a travel of 60 feet. Before the C.T. and abaft the Navigating Officers' Deck House, and right over to starboard beam, are powerful derricks for lifting seaplanes and flying boats from the water. As a result of experiments with *Langley*, certain modifications have been made which should enable planes to land safely on deck in any weather.

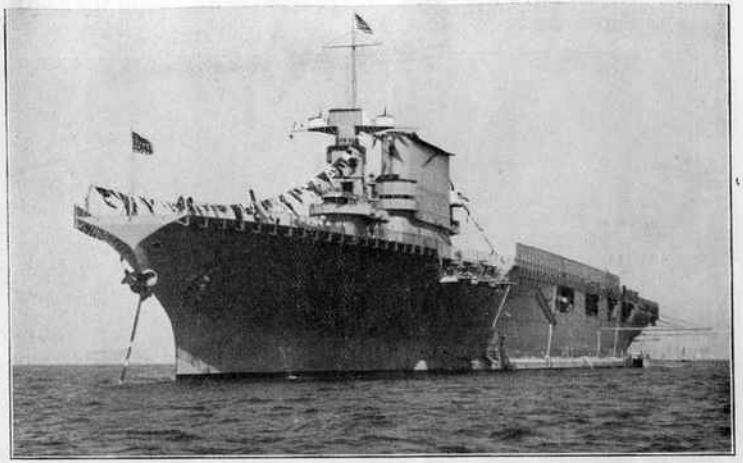
Reported that 120 planes can be carried. Photos show them with from 70 to 80 planes on deck ready for flight, but number varies as the type of plane employed.

Total cost of these ships, with aircraft, was over $15,000,000 each.

Engineering Notes.—Each boiler 11,250 H.P. Steam pressure, 295 lbs. to sq. inch. Fuel consumption estimated at 2000 tons daily under full power. Machinery is the most powerful ever installed in a warship ; it is all controlled, so far as main engines are concerned, from one central position. There are over 1000 auxiliary motors, ranging from 425 H.P. ventilating plant down to the small electric motors connected with the self-synchronising electric fire-control arrangements, which develop 1-200th of one H.P. For general distribution through the ship, current is supplied by six turbo-generators of 750 K.W. each. There are eight propelling motors of 22,500 H.P. (two to each of the four shafts), speed 317 R.P.M. The combined illuminating power of the S.L. is equal to 3,260,000 c.p. Altogether, these ships represent the climax of American practice in applying electric power to warship construction. On trials, it is stated that 97% of designed speed was obtained with 85% of designed power. *Lexington* did the voyage from San Diego to Honolulu 2228 miles at an average speed of 30·7 kts. A speed of 34·5 kts. was maintained for one hour by the latter ship with S.H.P. 210,000.

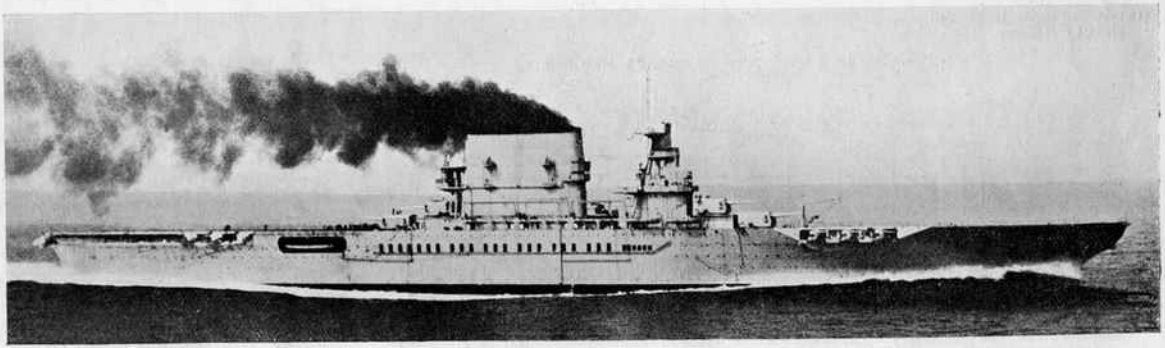


SARATOGA. *Photo, Nov., 1927, Topical.*



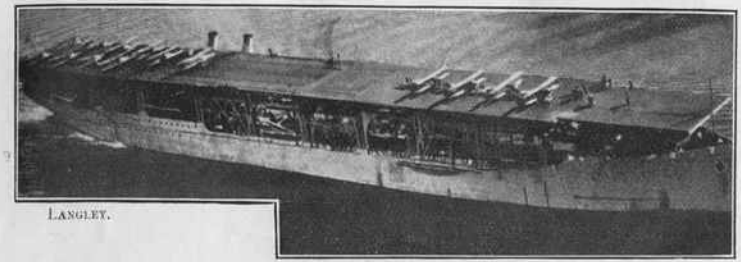
SARATOGA. 1928 *Photo, by favour of H. C. Bywater, Esq.*

SARATOGA. 1928 *Photo, by favour of H. C. Bywater, Esq.*



SARATOGA. *Official photo, added 1933.*

AIRCRAFT CARRIERS—FIRST LINE (CV).



LANGLEY.

1925 *Photo.*

LANGLEY (ex-Fleet Collier *Jupiter*, 1912, launched Aug. 24th, 1912, converted 1920-21).

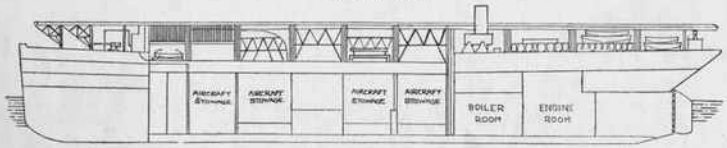
Displacement, { *Normal*, 12,700 tons. / *Full load*, tons. } Complement, 341 (excluding flying personnel).

Length, { *p.p.* 520 feet. / *o.a.* 542 feet. } Beam, 65 feet. Draught { *Mean*, 18 feet 10½ in. / *Full load*, feet. }

Guns:
4—5 inch, 51 cal.
(Carries 275 bombs for aircraft, also 24 torpedoes).

Armour:
Nil.

Note to Plan.—Now has 2 funnels, which are arranged to lower as in Japanese *Hosho*.



Machinery.—G.E. turbines and electric drive. 2 screws. Boilers: 3 double-ended cylindrical and 1 auxiliary. S.H.P. (on first trials as Fleet collier) 7152 = 14·99 kts. *Max.* fuel capacity: oil only, 2300 tons.

Engineering Notes.—First large ship of U.S.N. built with electric drive and Melville-McAlpine reducing gear. This system of propulsion proved so successful, it has been adopted for Capital Ships. Two horizontal smoke ducts on port side with hinged extensions which can be lowered. Fitted with Sperry gyro-stabiliser.

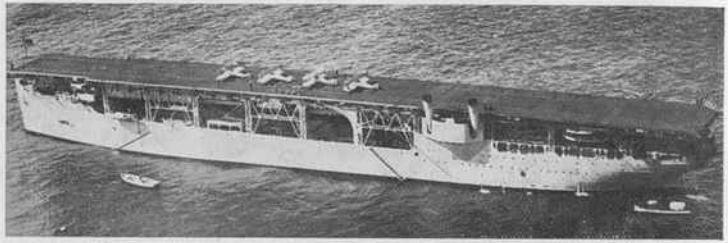


Photo added 1930.

Official photo added 1930.

W/T. Notes.—Masts stow flat along hangar deck. Auxiliary radio carried for communicating with 'planes when main W/T. masts are housed down.

Aircraft Capacity.—Maximum capacity reported as 55 'planes, but at present carries:—

(*a*) 12 single-seater chasing 'planes (3 hours endurance at 100 kts.).
(*b*) 12 two-seater spotting 'planes (4 hours endurance at 100 kts.).
(*c*) 4 torpedo-dropping 'planes (2 hours endurance at 100 kts.). (24 torpedoes carried for these.)
(*d*) 6 80-kt. torpedo-seaplanes.

Aircraft Stores, Repairs, &c.—For planes, all stores, spare parts, accessories, and magazines built for bombs, torpedoes, &c. Petrol capacity: 1130 tons, with elaborate plant for pumping petrol and lubricating oil to hangar and flying decks. Repair plant; machine shop; wing-repair shop; metal working shop; kite balloon filling station, etc.

Handling of Aircraft.—Original cargo holds altered to give max. space for housing 'planes. Runways below flight deck carry travelling cranes for hoisting 'planes from hold and moving them fore and aft, or to lifts for hoisting to flying deck. Electric lift raises 'planes from hangar to flying deck.

Flying-off.—Flight deck: 534 × 64 feet and 56 feet over w.l. Launching catapults fitted which can deliver torpedo 'planes into air at 60 m.p.h. with 60 feet run.

Flying-on and Landing Alongside.—Mantlets rigged to check speed. 2 cranes on each beam, with wide radii to pick seaplanes from water and place them on deck. Can receive 'planes at 60 m.p.h. and stop in 40 feet without injury to machine or pilot. It is considered safe for 'planes to alight on deck in a moderate sea.

General Notes.—Begun at Mare Island N. Yd., October, 1911, and completed as Fleet Collier, 1913. So served till March, 1920, when she was placed out of commission for conversion by Norfolk Navy Yd. For training purposes a complete and full-sized replica of LANGLEY's flight deck, with landing net, has been erected at the Long Beach Aerodrome

(**See also Aircraft Tenders on a later page.**)

(Minneapolis Class—5+3 Ships)

ASTORIA (No. 34) (Puget Sound, N.Y.)

MINNEAPOLIS (No. 36) (Philadelphia, N.Y.)

NEW ORLEANS (No. 32) (New York, N.Y.)

TUSCALOOSA (No. 37) (New York S.B. Co., Camden)

SAN FRANCISCO (No. 38) (Mare Island D.Y.)

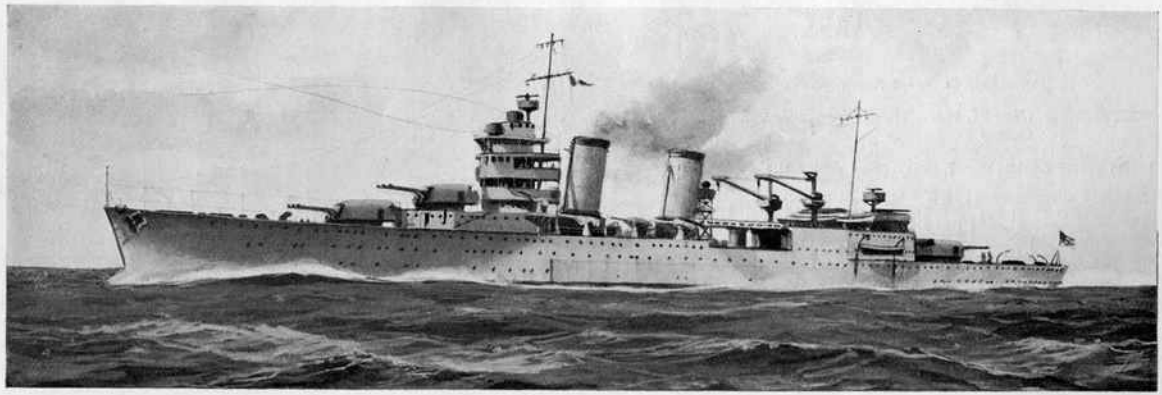
QUINCY (No. 39) (Bethlehem. S.B. Co., Fore River).

VINCENNES (No. 40) To be commenced in 1934. (Bethlehem S.B. Co., Quincy.)

(No. 41) To be commenced in 1935.

Displacement: 10,000 tons. Complement,

Dimensions: 573 (*w.l.*) × 61·8 × 19·5 feet.

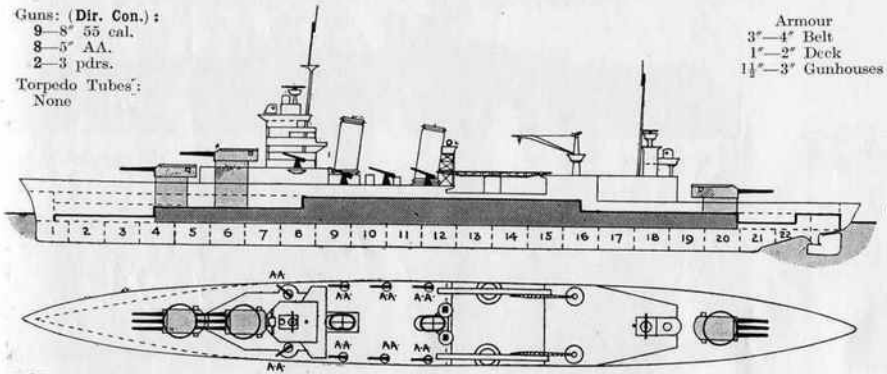


Astoria. 1932 *Illustration.*

Guns: (**Dir. Con.**):
9—8″ 55 cal.
8—5″ AA.
2—3 pdrs.

Torpedo Tubes:
None

Armour
3″—4″ Belt
1″—2″ Deck
1½″—3″ Gunhouses
} not Official



Machinery: Parsons geared turbines. S.H.P. 107,000 = 32·5 kts. 8 Babcock & Wilcox "S.X." boilers. 4 screws.

General Notes.—In this class, the forecastle deck has been extended to the second funnel with a slight lowering of the freeboard; the bow form altered and overhang dispensed with; bridges raised and pole rig substituted for tripods; A.A. guns re-distributed; hangars moved aft and extended to shelter deck, all the boats excepting the lifeboats being stowed on top to avoid interference with the A.A. guns. These ships will have better protection than the *Portland* class as armour has been distributed to better advantage on the new design. The utmost economy has been effected in construction, electric welding having been employed extensively and weight saved in every direction even to the extent of using aluminium paint internally. The 8″ guns and mountings are of a lighter model and the weight here saved has been put into armour. There is a certain amount of plating on the bridge-work, not shown in the plan.

HEAVY CRUISERS—FIRST LINE.

(Portland Class—2 Ships).

PORTLAND (May 21, 1932). (Bethlehem S.B. Co., Quincy.)

INDIANAPOLIS (Nov. 7, 1931). (New York S.B. Co.)

Standard Displacement: 9,950 tons. Complement.

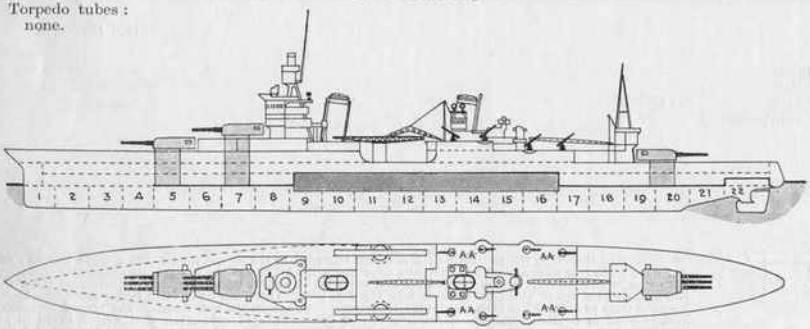
Dimensions: 584 (*w.l.*) × 66·1 × 17·5 feet.

Portland. 1933 *Photo, Official.*

Guns:
9—8″ 55 cal.
8—5″ AA.
2—3 Pounders.

Torpedo tubes:
none.

Armour: (Not Official.)
3″—4″ Belt.
1″ Deck.
1½″—3″ Turrets.

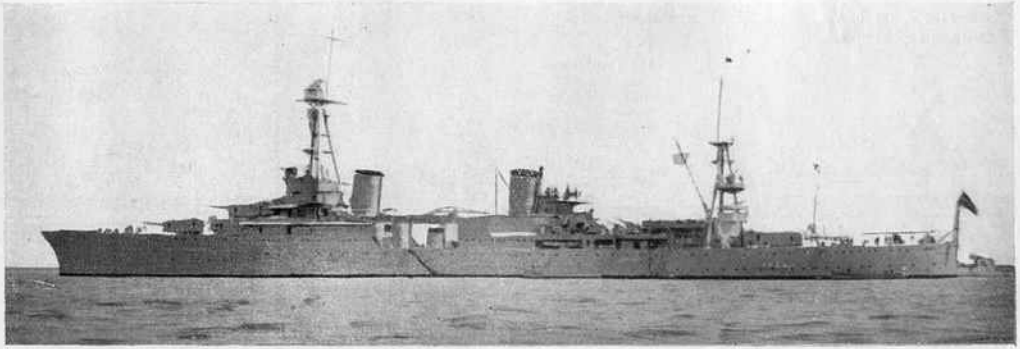


Indianapolis. 1933 *Photo, Official.*

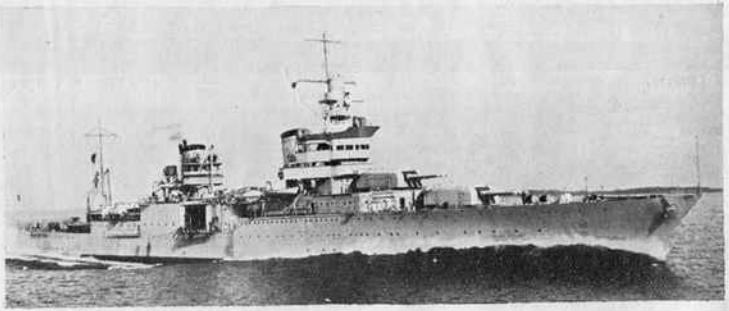
Machinery: Parsons geared turbines. S.H.P. 107,000 = 32·5 kts. 8 White-Forster boilers. 4 screws.

General Notes.—These ships follow the general design of the *Augusta* class with alterations in weight distribution to lessen metacentric height and make them stiffer at sea. The *Augusta* design having worked out at 9,050 tons only, about 1,000 extra tons of armour have been allotted to the *Portland*, which is mainly distributed over the horizontal protection. But construction was too far advanced for full advantage to be made of the disposal of the additional weight. Some 40 tons of plating has been spread over the bridge work, which is higher than in *Augusta*, with a 30 feet reduction in the height of the masthead control top. *Portland* laid down February, '30, completed Feb., 1933. *Indianapolis* laid down March, 1930. Completed November, 1932.

Indianapolis (note extension of forecastle to catapult base). 1933 *Photo, Official.*



AUGUSTA. 1931 *photo, Mr. L. Opdycke.*



INDIANAPOLIS. 1933 *Photo, Official.*

PORTLAND. 1933 *Photo, Official.*

HEAVY CRUISERS—FIRST LINE.

(Augusta Class 6—ships).

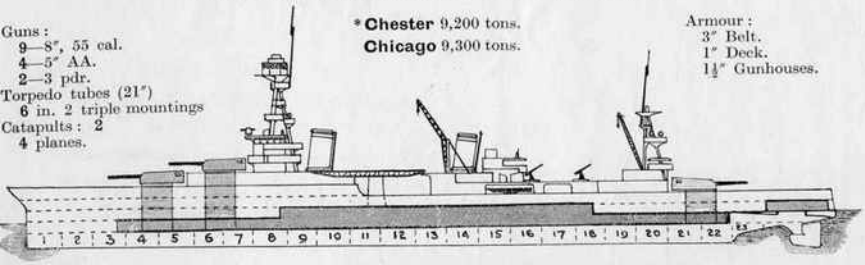
AUGUSTA (Feb. 1st, 1930). **CHESTER** (July 3rd, 1929). **CHICAGO** (Apr. 10th, 1930).
HOUSTON (Sept. 7th, 1929). **LOUISVILLE** (Sept. 1st, 1930). **NORTHAMPTON** (Sept. 5th, 1930).

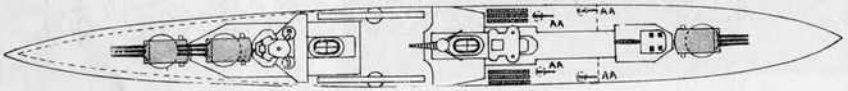
Standard displacement, 9,050 tons.* Complement, 611.
Dimensions, 582 (*p.p.*), 600 (*o.a.*) × 65 × 17 feet 7 inches (*mean*).

Guns:
9—8″, 55 cal.
4—5″ AA.
2—3 pdr.
Torpedo tubes (21″)
6 in. 2 triple mountings
Catapults: 2
4 planes.

*Chester 9,200 tons.
Chicago 9,300 tons.

Armour:
3″ Belt.
1″ Deck.
1½″ Gunhouses.





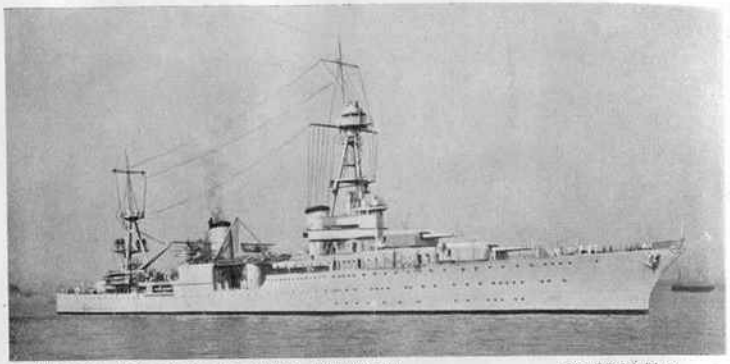
Machinery: Parsons geared turbines. Designed S.H.P. 107,000 = 32·7 kts. 8 White-Forster boilers, excepting in *Northampton* (8 Yarrow). 4 screws. Radius:

General Notes.—Authorised 1926–27 under Act of December, 1924, as Nos. 26–31. Although this class are considerably improved editions of the *Pensacola*, they have not proved particularly successful. The previous class having worked out at 9,100 tons only, the dimensions were increased and a forecastle deck added. Weight was saved by reducing and re-grouping the armament, while a certain amount of extra protection was worked in. Because of vibration in the *Pensacola* the hull was stiffened to try and overcome this defect. Owing to the centre of gravity being placed too low, they roll considerably and *Northampton* has been fitted with bigger bulge keels. If the anti-rolling tanks in *Pensacola* are more successful in overcoming this defect, these will be fitted to the remainder of the class. Some have developed cracked stern posts due to weight-saving and/or vibration. Four planes are carried, two on top of and two inside the large hangars amidships. *Houston*, *Augusta* and *Chicago* are fitted as flagships and extra accommodation has been secured by extending the forecastle aft to the catapult.

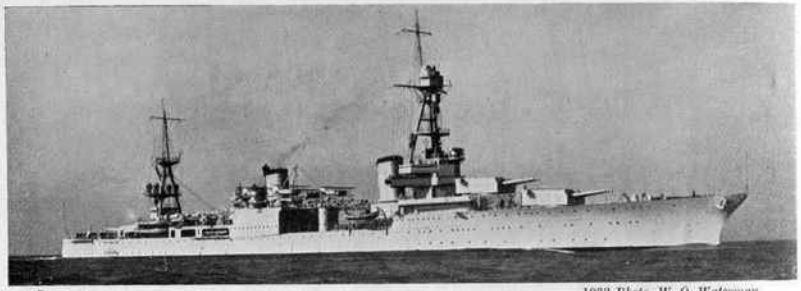
Gunnery Notes.—

Engineering Notes.—Heating surface, 95,040 sq. feet. Machinery weighs 2,161 tons. 4 Turbo-generator sets; 250 kilo-watts each; 120—240 volts; built by General Electric Co. There are 4 boiler rooms.

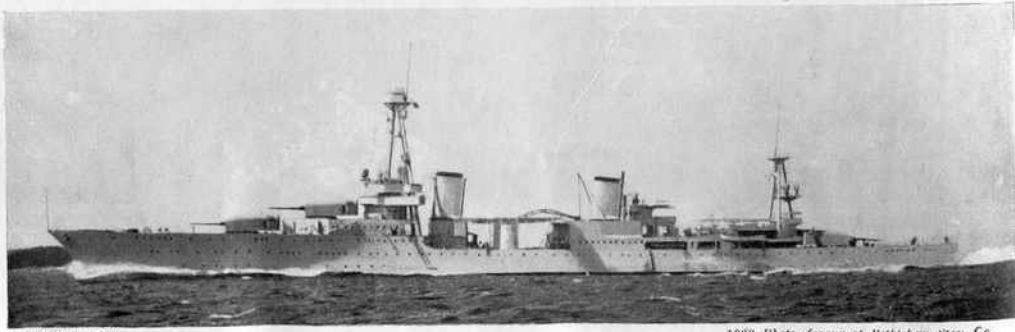
Name	*Builders*	*Machinery*	*Laid down*	*Completed*	*Trials*
Augusta	Newport News Co.	G.E. Co.	2/7/28	Jan., 1931	33·11
Chester	Am. Brown Boveri Cpn.		6/3/28	June, 1930	33·04
Chicago	Mare Island Navy Yard		10/9/28	March, 1931	—
Houston	Newport News Co.		1/5/28	June, 1930	33·02
Louisville	Puget Sound Navy Yard		4/7/28	March, 1931	32·74
Northampton	Bethlehem S.B. Co., Quincy		12/4/28	May, 1930	33·10



Houston. (*Note extension of forecastle to catapult base.*) 1931 *Official Photo.*



Chester. 1933 *Photo, W. O. Waterman.*



Northampton. 1930 *Photo, favour of Bethlehem Steel Co.*

(Pensacola Class).

PENSACOLA (April 25th, 1929), **SALT LAKE CITY** (Jan. 23rd, 1929).

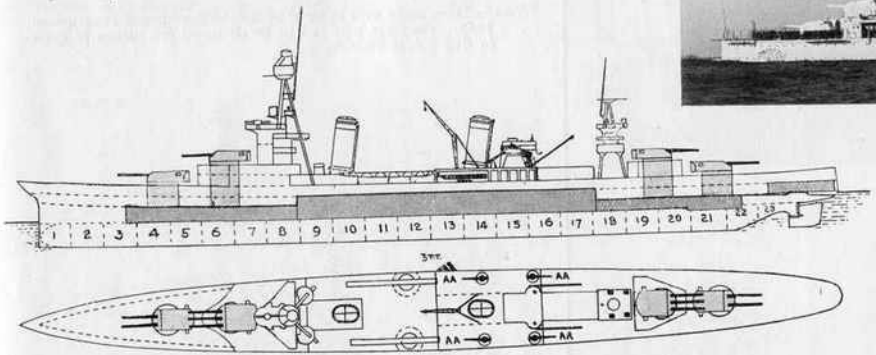
Displacement, 9,100 tons.
Complement, 612.

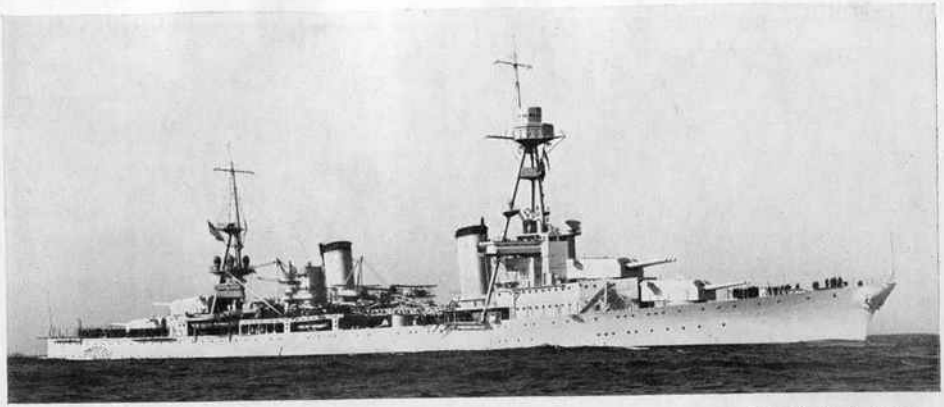
Length (*p.p.*), 570 feet; *o.a.*, 585½ feet. Beam, 64 ft.

Mean draught (at *normal* displacement), 17 ft. 5 in.

Guns:
10—8 inch, 55 cal.
4—5 inch, 25 cal. AA.
2—3 pdr.
Torpedo tubes (21 inch): **6** (tripled).
Catapults, **2**.
4 planes.

Armour:
3″ side.
1″ deck.
1½″ gunhouses.





Salt Lake City. 1933 *Photo, W. O. Waterman.*

Machinery: 4 sets of Parsons geared turbines. Cramp type, with de Laval single reduction gearing. Designed S.H.P., 107,000=32.5 kts. (more expected). 8 White-Forster boilers, working pressure reported as 300 lbs. to square inch. 4 screws. Radius of action: 13,000 miles at 15 kts.

General Notes.—Laid down under Act of December 18, 1924. Tons per inch immersion, 60·7. Utmost economy in weights practised in design and construction. Aluminium alloy fittings replacing steel and aluminium paint is used internally. Welding has been employed wherever possible instead of rivetting. They suffer from lack of freeboard, vibration is excessive, mainly due to the shape of their sterns, and they roll considerably. Anti-rolling tanks are being tried out in *Pensacola*.

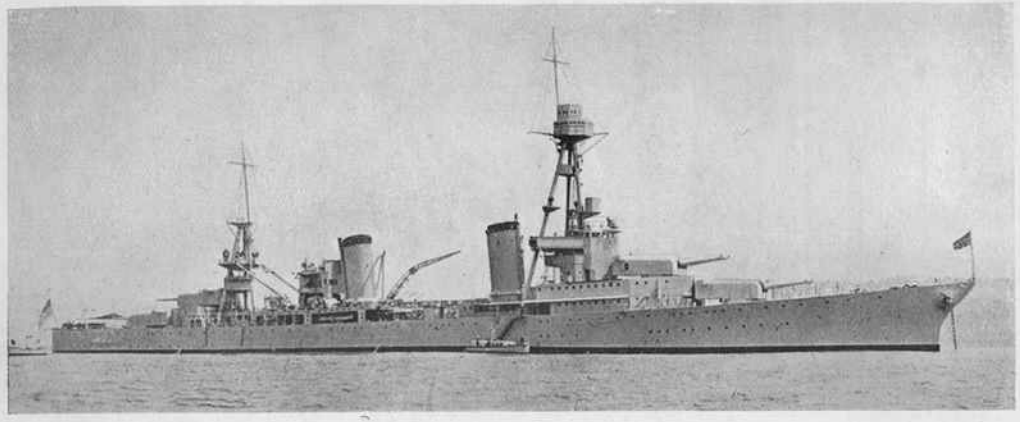
Gunnery Notes.—These ships are the first to carry 8in. 55 cal. guns. The fore control station at the mast head is about 120 feet above w.l.: the after control is abaft second funnel, and AA. control on fore bridge.

Engineering Notes.—Heating surface, 95,000 square feet. Machinery weighs 2,161 tons. Can steam at 30 kts. with 60 per cent H.P. There are 2 engine and 2 boiler rooms, the outboard shafts coming from the foremost engine rooms.

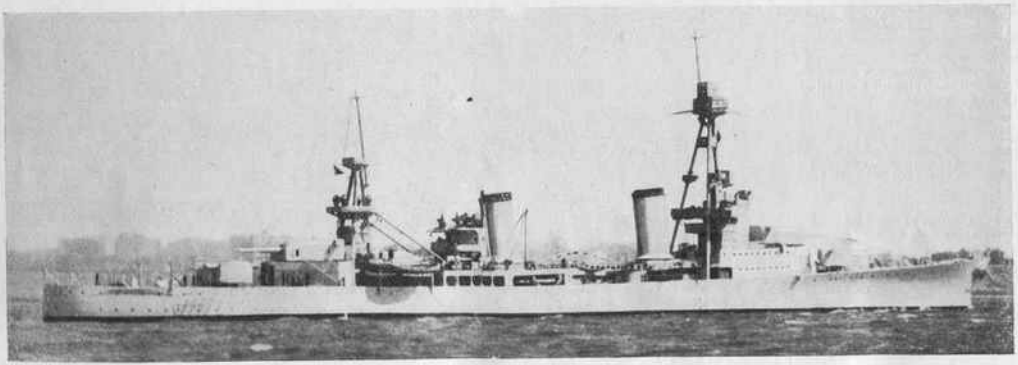
Name	*Builders*	*Machinery*	*Laid down*	*Completed*	*Trials*
Pensacola	New York N. Yd.	Am. B. B. Cpn.	Oct. 1926	Nov. 1929	107,746=32·78
Salt Lake City	Am. Brown Boveri Cpn.		June 1927		

Salt Lake City. *Official Photo, added 1930.*

CRUISERS.



PENSACOLA. 1931 *Photo, Mr. L. Opdycke.*



PENSACOLA. *Official Photo, added* 1930.

Light Cruisers.

SAVANNAH (No. 42) } New York S.B. Co., Camden.
NASHVILLE (No. 43) }

BROOKLYN (No. 44) New York N.Y.

PHILADELPHIA (No. 45) Philadelphia N.Y.

Displacement : 10,000 tons.

Guns :
—6″.

Note.—These ships were ordered under the Emergency Programme 1933. They are believed to be designed for fifteen 6″ guns in five Triple Turrets.

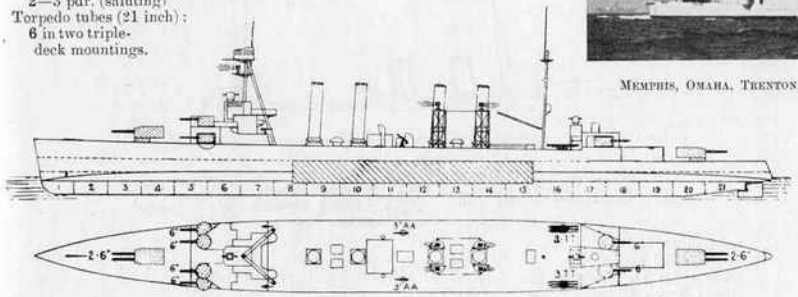
(Omaha Class—10 Ships.)

OMAHA (Dec. 14th, 1920), **MILWAUKEE** (Mar. 24th, 1921),
RALEIGH (Oct. 25th, 1922), **DETROIT** (June 29th, 1922),
CONCORD (Dec. 15th, 1921), **TRENTON** (April 16th, 1923),
MEMPHIS (April 17th, 1924), **RICHMOND** (Sept. 29th, 1921),
MARBLEHEAD (Oct. 9th, 1923), **CINCINNATI** (May 23rd, 1921).

Displacement: 7050 tons.
Dims.: 555·6 (*o.a.*) × 55 × 14·3 feet.
Compl.: 458.

Guns (**Dir. Con.**):
10—6 inch, 53 cal. Mk. XII.
(**11**—6 inch in Marblehead.
4—3 inch, 50 cal. AA.
2—3 pdr. (saluting)
Torpedo tubes (21 inch):
6 in two triple-deck mountings.

Armour:
3″ Side .....
1½″ Upper Deck .....



Ahead:
6—6 inch.

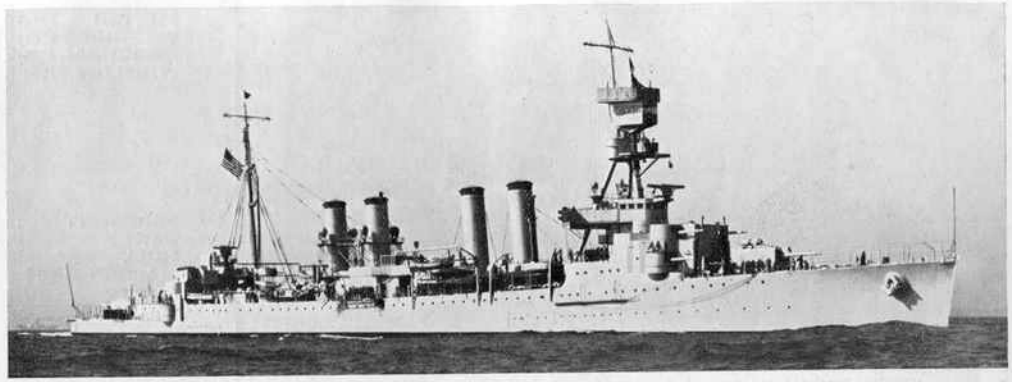
Astern:
4—6 inch

Broadside: **7**—6 inch.

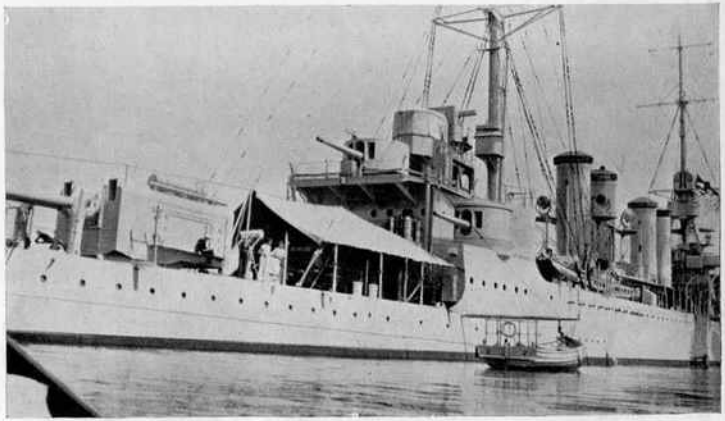
Machinery: Turbines (see Table for types), with reduction gears. Designed S.H.P. 90,000 = 33·7 kts. 4 screws. Boilers: see Table. Fuel: oil only; *about* 2000 tons (300,000 gallons). Radius of action: 10,000 miles at 15 knots, 7,200 at 20 kts.

Name.	*Built and Engined by*	*Laid down*	*Completed*	*Trials*	*Turbines.*	*Boilers*	*Heating Surface (sq. ft.)*
Omaha	Todd Co., Tacoma	6 Dec. '18	Feb. '23	94,290 = 34·87	Westghs. Parsons	12 Yarrow	90600
Milwaukee	" "	13 Dec. '18	June '23	90,060 = 34·64	"	12 Yarrow	
Cincinnati	" "	15 May '20	Dec. '23	94,290 = 34·44	"	12 Yarrow	
Raleigh	Bethlehem Co., Quincy	16 Aug. '20	Feb. '24	97,722 = 34·63	Curtis	12 Yarrow	90084
Detroit	" "	10 Nov. '20	July '23	97,375 = 34·63	"	12 Yarrow	
Richmond	Wm. Cramp & Sons	16 Feb. '20	June '23	95,000 = 34·2	Parsons	12 White-F	
Concord	" " "	29 Mar. '20	Nov. '23	92,772 = 33·48	"	12 White-F	90840
Trenton	" " "	18 Aug. '20	April '24	33·01	"	12 White-F	
Marblehead	" " "	4 Aug. '20	Sept. '24	95,950 = 34·24	"	12 White-F	
Memphis	" " "	14 Oct. '20	Jan. '25	33·43	"	12 White-F	

General Notes.—Original design provided **8**—6″ guns only, the fore and aft turrets being added in 1920 with an additional to the displacement of 600 tons. In 1930 *Marblehead* had the lower after guns removed, a single 6″ on the top of the after superstructure replacing them. In *Cincinnatti, Detroit, Raleigh, Richmond*, there are **10**—6″, only the single gun not having been fitted. The rest of the class will be altered in due course.

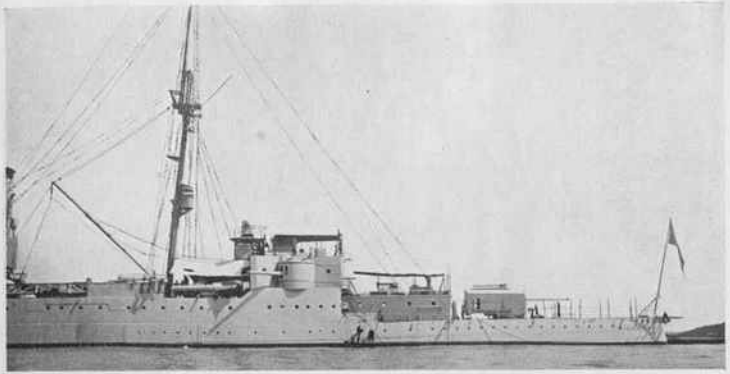


Memphis, Omaha, Trenton, Milwaukee and Concord still carry **12**—6″ guns. 1933 *Photo, W. O. Waterman.*



Marblehead. (Showing alterations to after battery.) 1930 *Photo, Mr. L. Opdycke.*

Light Cruisers



RICHMOND. (Showing alterations to after battery.) 1931 *Photo, Mr. L. Opdycke.*

1933 *Photo, Mr. L. Opdycke.*

Flotilla Leaders

"356" CLASS (8 vessels). Nos. DD. 356–363.

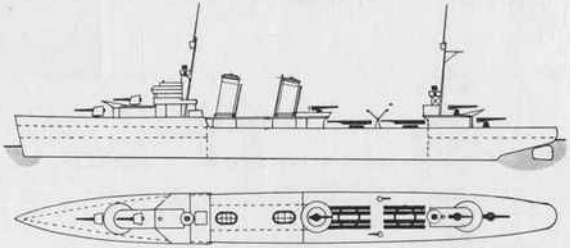
PORTER	(356)	New York S.B. Co.	**PHELPS**	(360)	Bethlehem S.B. Co.
SELFRIDGE	(357)		**CLARK**	(361)	
MCDOUGAL	(358)		**MOFFETT**	(362)	
WINSLOW	(359)		**BALCH**	(363)	

Laid down 1933 under Emergency Programme.
1,850 tons. Cost about $3,900,000.

Destroyers

"*Dewey*" CLASS (8 boats). Nos. DD. 348–355.

FARRAGUT	(348)	Fore River.	**WORDEN**	(352)	Puget Sound N.Y.
DEWEY	(349)	Bath, I.W.	**DALE**	(353)	New York N.Y.
HULL	(350)	New York N.Y.	**MONAGHAN**	(354)	Boston N.Y.
MACDONOUGH	(351)	Boston N.Y.	**AYLWIN**	(355)	Philadelphia N.Y.



Laid down 1931.
Displ. 1500 tons.
Dims.: 341·6×34·2×10·2 ft. Radius:—6000 miles at cruising speed.
Guns: **5**—5″, 40 cal. **4** AA. Tubes: **8**—21″
H.P. = 37 Kts.

All belong to the 1916 Programme and ordered in 1932–33.

"364" CLASS (16 boats). Nos. DD. 364–379.

MAHAN	(364)	United Dry Dock Co., N. York.	**CASSIN**	(372)	Philadelphia N.Y.
CUMMINGS	(365)		**SHAW**	(373)	
DRAYTON	(366)	Bath, I.W.	**TUCKER**	(374)	Norfolk N.Y.
LAMSON	(367)		**DOWNES**	(375)	
FLUSSER	(368)	Federal S.B. Co., Kearny, N.J.	**CUSHING**	(376)	Puget Sound N.Y.
REID	(369)		**PERKINS**	(377)	
CASE	(370)	Boston N.Y.	**SMITH**	(378)	Mare Island N.Y.
CONYNGHAM	(371)		**PRESTON**	(379)	

Laid down 1933.
Displ.: 1,500 tons.
Dims.:
Guns:
H.P. = kts.

All ordered under the 1933 Emergency Programme.
Cost *circa* $3,400,000.

184 ABBOT 1
211 ALDEN 2
258 AULICK 4
128 BABBITT 6
126 BADGER 6
185 BAGLEY 1
269 BAILEY 5
246 BAINBRIDGE .. 6
267 BALLARD 5
256 BANCROFT 4
213 BARKER 2
149 BARNEY 2
248 BARRY 6
251 BELKNAP 4
95 BELL 7
153 BERNADOU ... 2
151 BIDDLE..... 2
150 BLAKELEY ... 2
215 BORIE 2
197 BRANCH 1
148 BRECKINRIDGE 2
232 BROOKS 6
210 BROOME 2
131 BUCHANAN ... 3

222 BULMER 2
166 BUSH 7
69 CALDWELL ... 8
104 CHAMPLIN 10
206 CHANDLER ... 2
106 CHEW 10
241 CHILDS 6
140 CLAXTON 8
186 CLEMSON 1
155 COLE 2
85 COLHOUN 7
72 CONNER 2
167 COWELL 7
109 CRANE 10
70 CRAVEN 11
164 CROSBY..... 7
134 CROWNINSHIELD 3
187 DAHLGREN ... 1
199 DALLAS..... 1
341 DECATUR 8
116 DENT 2
157 DICKERSON ... 6
117 DORSEY 2
152 DU PONT 2

84 DYER 7
219 EDSALL..... 2
265 EDWARDS 5
216 EDWARDS, JOHN D. ... 2
146 ELLIOT 2
154 ELLIS 2
78 EVANS 3
93 FAIRFAX 8
169 FOOTE..... 7
228 FORD, JOHN D. 2
234 FOX..... 6
260 GILLIS..... 4
233 GILMER..... 6
247 GOFF 6
188 GOLDSBOROUGH 1
266 GREENE 5
145 GREER 2
82 GREGORY 7
92 GRIDLEY 10
71 GWIN 12
133 HALE 3
141 HAMILTON 8
183 HARADEN 12

91 HARDING 10
231 HATFIELD 6
107 HAZELWOOD .. 10
160 HERBERT 6
178 HOGAN 10
181 HOPEWELL ... 1
249 HOPKINS 6
208 HOVEY 2
179 HOWARD 10
342 HULBERT 11
236 HUMPHREYS .. 6
255 INGRAM, OSMOND ... 4
245 JAMES, REUBEN 6
130 JONES, JACOB . 6
230 JONES, PAUL . 2
170 KALK 7
235 KANE 6
138 KENNISON 8
137 KILTY 8
80 KIMBERLY ... 7
242 KING..... 6
263 LAUB 5
250 LAWRENCE ... 6

118 LEA 2
158 LEARY 6
336 LITCHFIELD .. 8
79 LITTLE 7
209 LONG 2
175 MACKENZIE ... 10
220 MACLEISH 2
168 MADDOX 7
74 MANLEY 3
321 MARCUS 9
191 MASON 1
253 MCCALLA 4
252 MCCOOK 4
223 MCCORMICK .. 2
237 MCFARLAND .. 6
90 MCKEAN 10
87 MCKEE 10
264 MCLANAHAN .. 5
274 MEADE 5
165 MEREDITH 7
271 MORRIS 5
105 MUGFORD 10
343 NOA 11
177 O'BANNON ... 10

239 OVERTON 6
161 PALMER 7
218 PARROTT 2
238 PAULDING, JAMES K. .. 6
226 PEARY 2
340 PERRY 8
76 PHILIP 3
227 PILLSBURY ... 2
225 POPE 2
345 PREBLE 3
344 PRESTON, WILLIAM B. 11
347 PRUITT 3
120 RADFORD 1
113 RATHBURNE... 2
176 RENSHAW..... 10
89 RINGGOLD 10
88 ROBINSON 10
254 RODGERS 4
147 ROPER 2
243 SANDS 6
190 SATTERLEE.... 1
159 SCHENCK 6
103 SCHLEY 10

268 SHUBRICK..... 5
346 SICARD 3
81 SIGOURNEY ... 7
221 SIMPSON 2
275 SINCLAIR 5
316 SLOAT 9
207 SOUTHARD 2
180 STANSBURY ... 10
86 STEVENS 7
224 STEWART 2
73 STOCKTON 2
302 STODDERT 10
83 STRINGHAM ... 7
240 STURTEVANT .. 6
273 SWASEY 5
114 TALBOT..... 2
156 TALBOTT, J. FRED 2
142 TARBELL 2
125 TATTNALL 6
94 TAYLOR 8
162 THATCHER 7
182 THOMAS 1

212 THOMPSON, SMITH 2
270 THORNTON ... 5
135 TILLMAN..... 13
272 TINGEY..... 5
214 TRACY 2
339 TREVER 8
229 TRUXTUN 2
259 TURNER 4
127 TWIGGS..... 6
144 UPSHUR 2
163 WALKER 7
139 WARD 8
132 WARD, AARON. 3
338 WASMUTH 8
115 WATERS 2
257 WELLES 4
217 WHIPPLE 2
75 WICKES 3
108 WILLIAMS..... 10
244 WILLIAMSON .. 6
143 YARNALL 2
337 ZANE..... 8

Numerals preceding name are the Official Number which is painted on the bows of each boat.

Number after name = Builder's Name (see list).

Builders :—

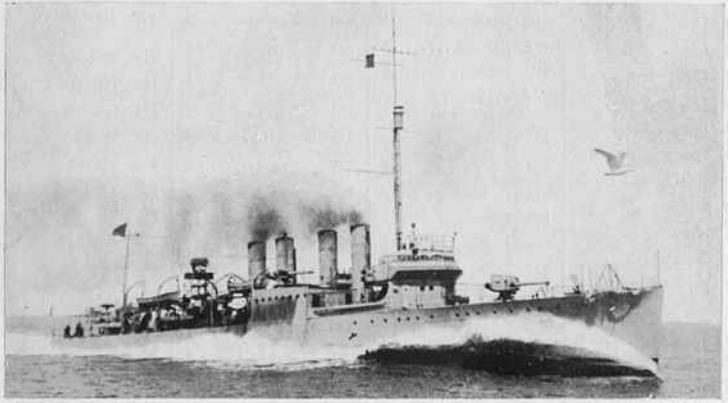
1 Newport News S.B Co.
2 Wm. Cramp & Sons.
3 Bath Iron Works.
4 Bethlehem S.B. Co., Quincy.
5 „ „ Squantum.
6 New York S.B. Co.
7 Fore River S.B. Co.
8 Navy Yard, Mare Island.
9 Bethlehem S.B. Co., S. Frans.
10 Union Iron Works.
11 Navy Yard, Norfolk.
12 Seattle Con. and D.D. Co.
13 Navy Yard, Charleston.

Transferred to Coast Guard :
GEORGE F. BADGER
HERNDON
HUNT
ABEL P. UPSHUR
WELBORN C. WOOD
SEMMES

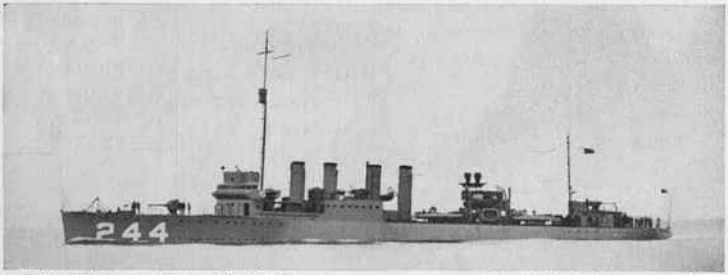
Employed as Target Ship :
LAMBERTON
BOGGS

DESTROYERS—FIRST LINE.

185 boats by various yards (Flush Deckers).



BROOKS. 1920 *Photo.*



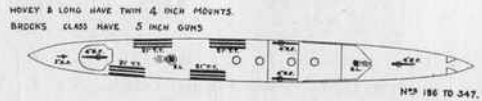
WILLIAMSON and boats Nos. 186—347 series. *Photo, 5th March, 1921, Gieves, Ltd.*

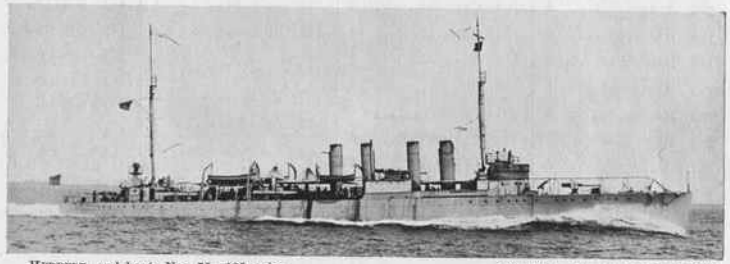
General Notes.—Displacement: 1060—1190 tons. Dimensions: 310 (*w.l.*), 314 ft. 4 in. (*o.a.*) × 30 ft. 11¼ in. × 9 ft. 4 in. *mean* draught, 9 ft. 10 in. *full load.* Armament*: **4**—4 inch, 50 cal., **1**—3 inch, 23 cal. AA., **12**—21 inch tubes in 4 triple deck mountings. Oil fuel: 375 tons. Complement, 122. In these boats the after 4 inch gun is on deck-house and the A.A. gun is on quarter deck—a modification which will be effected in all other "Flush Deck" destroyers. 16 D.C. carried in some.

*8—4 inch in *Hovey* (208), *Long* (209); **4**—5 inch in *Brooks* (232), *Fox* (234), *Gilmer* (233), *Hatfield* (231), and *Kane* (235). **5**—4 inch in *Semmes* (189).

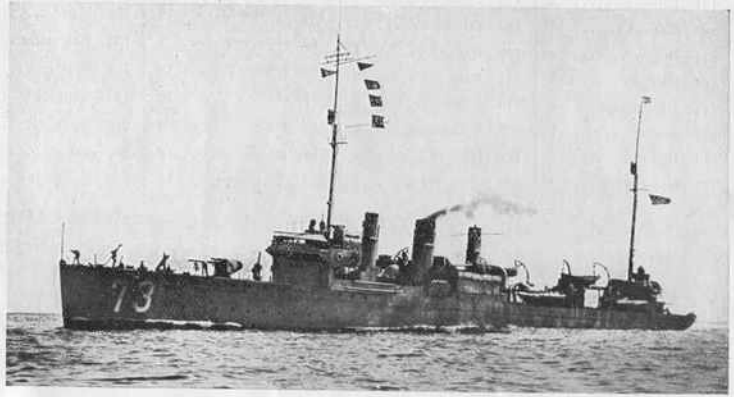
Designed S.H.P. 26,000—27,000 = 35 kts. Parsons Westinghouse or Curtis turbines. 2 Screws. 4 Normand, Yarrow or White-Forster boilers.

Curtis-engined boats. Oil consumption: 280-290 gallons at 16 kts., over 1000 gallons at full speed. Can get up steam in less than 20 minutes if required, and can manage 5 kts. under exhaust steam only. R.P.M., 181 for 16 kts., 465 for 35 kts.





HERBERT, and boats Nos 75—185 series. 1920 *Photo, by courtesy of Builders.*

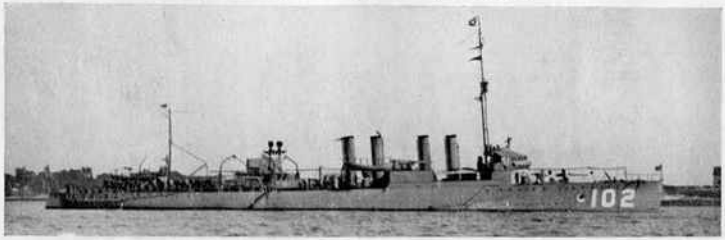


STOCKTON (CONNER & GWIN similar). 1919 *Photo.*

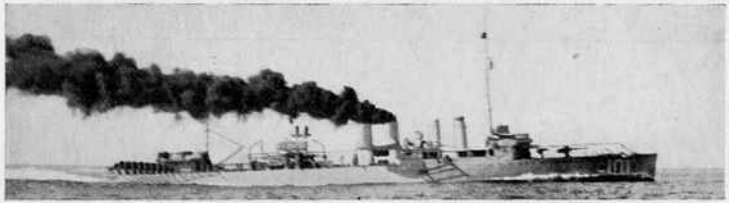
Oil fuel supply is about 288—294 tons in earlier boats # 75 series.

12 Light Mine Layers—DM.

(ex-Flush Deck Destroyers of "# *75 Series.*")



MAHAN. 1921 *Photo.*



LANSDALE. 1921 *Photo.*

5 *Fore River*: ***Israel, Lansdale, Luce*** (ex-*Schley*), ***Murray, Stribling.***
3 *Union I. W.*: ***Anthony, Ingraham, Sproston.***
4 *Newport News B Co.*: ***Ramsay, Gamble, Breese, Montgomery.***

Displacements: 1191 tons *normal* (1284 *full load*). Dimensions: 310 (*w.l.*), 314 ft. 4 in. (*o.a.*) × 30 ft. 11¼ in. × 9 ft. 2 in. (*mean* draught), 9 ft. 10 in. (*full load* draught aft).

Guns: **4**—4 inch, 50 cal., **1**—3 inch, 23 cal. AA.

Torpedo tubes: Removed on conversion.

Mines carried: Unofficially reported to carry 80 Mark IV mines, for which magazines, deck rails and chutes have been fitted.

Machinery (*about* 486 tons): Curtis geared turbines. 4 Yarrow boilers—27,540 sq. ft. heating surface. 2 screws. Designed S.H.P. 27,000 = 35 kts. (only *Lansdale* made this *on trials*). Fuel: 283 tons oil. Complement, 128.

Notes.—Flush Deck Destroyers converted 1920-21. *Israel* has submarine bell.

Identification Numbers

Anthony	***DM. 12***	***Luce***	***DM. 4***
Breese	***DM. 18***	***Montgomery***	***DM. 17***
Gamble	***DM. 15***	***Murray***	***DM. 2***
Ingraham	***DM. 9***	***Ramsay***	***DM. 16***
Israel	***DM. 3***	***Sproston***	***DM. 13***
Lansdale	***DM. 6***	***Stribling***	***DM. 1***

A number of the old "1000 tonners" (see page 508) are still listed, but are no longer regarded as effective and have been deleted accordingly.

Target Ship.

UTAH (ex-battleship), 22,000 tons.
Dims.: 521·6 (*o.a.*) × 106 × 32 feet.
Speed: 21·04 kts.

81 (+ 3 *bldg.* + 4 *authorised*) Submarines.

Fleet Submarines—Cruiser Type (SC).

***Porpoise* (*No. 172*). *Pike* (*No. 173*).** Portsmouth N.Y.
***Shark* (*No. 174*) *Tarpon* (*No. 175*).** Electric Boat Co., Groton, Conn.

1317 Tons.
Guns 3 inch.

Ordered 1933 under Emergency Programme.

DOLPHIN. 1933 *Photo, Official.*

Dolphin* (*D.1 ex *V.7*) Portsmouth N.Y. Laid down 1930. Completed June '32.
Displacement: 1,540/2,215 tons. Dimensions: 307 (*w.l.*) × 27·10 × 13 feet.
H.P. 4250. Speed: 18 kts. *surface.*
Armament: 1—4 inch gun.
6—21 inch tubes.

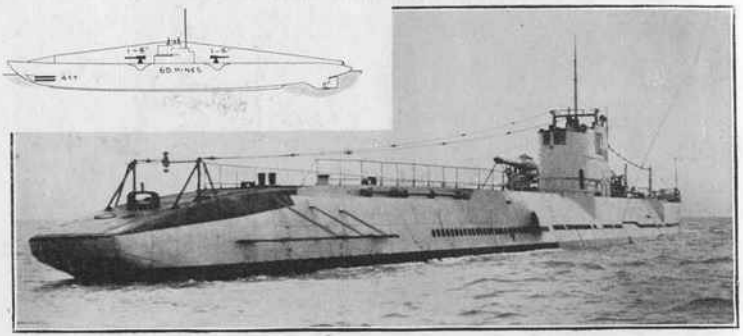
Cachelot* (*C.1 ex *V.8*) Portsmouth N.Y. Laid down 1931.
Cuttlefish* (*C.2 *V.9*) Electric Boat Co. Laid down 1931.

Displacement: 1300/1650 tons. Dimensions: 260 (*w.l.*) × 29·9 × 13 ft.
H.P.: 3100. Speed:
Armament: 1—3 inch gun. 6—21 inch tubes.

1931 *Official Photo.*

Narwhal* (*N.1 ex. *V.5.*) (1929), ***Nautilus* (*N.2*** ex. *V.6*) (1929). Laid down at Portsmouth and Mare Island Navy Yards, respectively, May 10th and August 2nd, 1927. Machinery for both vessels built at New York Navy Yard. Displacement: 2760/3960 tons. Dimensions: 371 × 33¼ × 16 feet. Armament: 2—6 inch, 6—21 inch tubes. Diesels of 5447 S.H.P. Speed 17/8·5 kts. Complement, 88. Estimated cost: Hull and machinery, $5,350,000; armament, $1,020,000. Authorised 1916 as Nos. 167–168. Completed in 1930.

Fleet Submarines—Minelaying Type (SM).

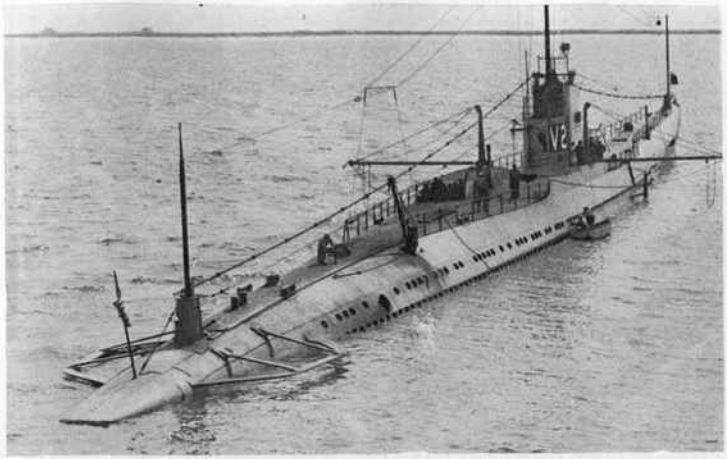


V 4. 1928 *Official Photo.*

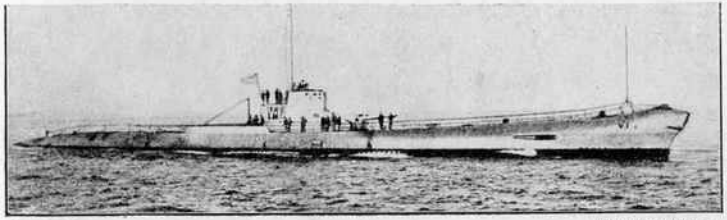
V 4. 1929 *Official Photo.*

Argonaut* (*A.1 ex *V.4*) (Portsmouth Navy Yard, Nov. 10th, 1927). Machinery by Brooklyn Navy Yd. Displacement: 2660/4080 tons. Dimensions: 381 × 33½ × 15½ feet. Armament: 2—6 inch guns, 4—21 inch tubes, 60 mines. Diesels of 3175 S.H.P. Speed 14·6/8 kts. Complement, 86. Is an improved edition of V1 type in other respects. Estimated cost: Hull and machinery, $5,300,000; armament, etc., $850,000. Authorised 1916, as *No.* 166, and completed April, 1928.

Fleet Submarines—First Line (SF).



BASS. 1930 *Photo.*



BARRACUDA. 1925 *Official Photo.*

3 *Bureau* design. ***Barracuda*** (ex-*V.1*) 17/7/'24. ***Bass*** (ex.-*V.2*,) 27/12/'24. ***Bonita*** (ex.-*V.3*) 9/6/'25. All Portsmouth N.Y. 2000/2,506 tons. Dimensions: 341·6 × 27 × 14·7 feet. Armament: 1—5" AA. Tubes: 6—21". 16 Torpedoes. Busch-Sulzer. M.A.N. S.H.P. 2 × 2,350 = 18 kts. Motors. H.P. 1,200 = 11 kts. (*Bass* has 1—3" AA. gun).

Have 2—1000 H.P. auxiliary Diesels for supplying current to electric motors which can be used for surface cruising. Radius: 12,000 miles.

Fleet Submarines—First Line (SF).

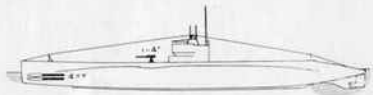
Note on S Class.—An official report in 1925 stated that "experience in manœuvres indicates that these vessels cannot be considered as a satisfactory type of fleet submarines."

S50. *Photo*, 1923.

1 *Bureau* design: ***S 48*** (1921). By Lake T. B. Co. 1000/1458 tons. Dimensions: 240 × 21⅝ × 13½ feet. Guns: 1—4 inch, 50 cal. Tubes: 5—21 inch (4 bow, 1 stern). 14 torpedoes carried. Engines: 2 sets M.A.N. (N.Y.) 4 cycle 6 cyl. = total B.H.P. 2000. Motors: 2 sets each 750 h.p. Speed 14·5/11 kts. Crash dive in 60 secs. *Max.* dive limit: 200 feet. Divided into 6 watertight compartments. Double hull amidships, single hull at ends. 3 periscopes. Oil: 23,411 gallons *normal*, 44,305 *max.* Rad: 8,000 at 10 kts. Authorised 1916. Complement: 38.

Note.—*S 48* is stated to have been re-engined in 1929 with two new motors of 1000 H.P. each, oil storage being increased at same time.

S 45. 1926 *Official Photo.*



6 *Electric Boat Co.* design: ***S 42—S 47*** (1923-24) 850/1126 tons. All contracted for by Electric Boat Co. and built by Bethlehem S. B. Co., Quincy. Authorised 1916-18, as *Nos. 153—158*. Dimensions: 225½ × 20⅝ × 15 feet. Guns: 1—4 inch, 50 cal. Tubes: 4—21 inch. 12 Torpedoes carried. Engines: Two sets 600 B.H.P., 8 cylinder, 4 cycle Nelseco. Motors: 2 sets each 750 H.P. Elect. Dy. Co. Speed 14.5/11 kts. Oil: 11,463—46,363 gallons. Complement: 38.

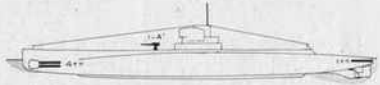
25 *Electric Boat Co.* design: ***S 1*** (1918), ***S 18—41*** (1918-22), viz., *S 1* by Fore River S. B. Co., *S 18—S 29* by Bethlehem S.B. Co., Quincy. *S 30*—S 41* by Bethlehem S. B. Co., San Francisco. 790/1092 tons. Dims: 219½ × 20¾ × 15 feet. 2 sets of 600 B.H.P. Nelseco Diesel engines. Motors: 2 sets 750 H.P. Ridgeway or Electric Dynamic Co. (*S 1*). Oil: 11,511/41,921 gallons. Have large radius of action *on surface*. Armament: 1—4 inch gun and 4—21 inch bow tubes (12 torpedoes carried). Authorised: *S 1* (1916, as No. *105*), *S 18—21* (1916-17 as Nos. *125—128*), *S 22—41* (1916-17, as *Nos. 127—146*). *S 1* experimentally fitted, 1923, to carry a small seaplane in a cylindrical tank abaft C.T.

General Note to all "S" boats.—Special attention given to constructional strength against depth charge attack. *S 37* was immersed to a depth of 208 feet for 65 minutes without inconvenience. *S 1—4, S 6—8, S 14—35*, all have Cutler-Hammer system of electric control. *S 9—13, S 36—41*, all fitted with Westinghouse or G. E. Co. pneumatic controllers, considered to be a decided improvement.

**Note.*—*S 30* built at expense of Philippines Government. *S 19* reached 33 fathoms during diving trials, Dec., 1925.

Submarines—First Line (SS).

S 14. 1929 *Official Photo.*



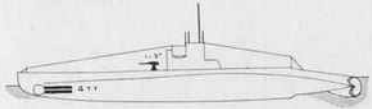
10 "*Bureau design*" boats: ***S3,*** (1918), ***S4, S6—S13*** (1919-21); all by Portsmouth Ny. Yd. Dims.: 231 × 21⅝ × 13½ feet. Dispt. 790/1092 tons. Guns: **1**—4 inch, 50 cal. Tubes: **4**—bow, 21 inch (**12** torpedoes carried). *S* 10—*S*13, **5** tubes (**14** torpedoes carried). Engines: *S* 3—9, 2 sets of 4-cycle Nelseco Diesels, each 700 B.H.P. (8 cyl.) *S* 10—13, 2 sets of 4-cycle "Bureau Design" M.A.N. (6 cyl.) type, each 1000 B.H.P. Motors: 2 sets 600 H.P. Westinghouse. Oil: 19,271/36,950 gallons. Speed 15/19·5 kts. Completed 1919-23. *S* 4 sank by collision with Coast Guard Destroyer, *Paulding*, on December 17, 1927; salved and brought in to port March 1928. Is now used as a special vessel for experimental purposes, and has no propulsive machinery at present.

4 *Bureau design*: ***S14—S17*** (1919—20). All by Lake T.B. Co. Dimensions: 231 × 21⅝ × 13 feet = 790/1092 tons. Guns: **1**—4 inch, 50 cal. Tubes: **4**—21 inch (**12** torpedoes carried). Engines: 2 sets M.A.N. (N.Y.) 4 cycle 6 cyl. = B.H.P. 2,000. Motors: **2** sets each 600 H.P. Westinghouse. Speed, 14/12.25 kts. Complement, 38. Oil, 19,271/36,950 gallons.

Submarines—First Line—*continued.*

R 3—R 10. 1920 *Photo.*

20 *Electric Boat Co. design*: ***R 1—R 20*** (1917-19), viz., *R 1—R 14* by Fore River S. B. Co., *R 15— R20* by Union I.W., San Francisco. Dims.: 186 × 18 × 14½ feet. 530/680 tons. **1**—3 inch, 50 cal. gun. **4** torpedo tubes (8 torpedoes carried). Engines: 2 sets of 440 B.H.P. (400 r.p.m.) 6-cyl. 4-cycle Nelseco Diesel. Fuel: 7691/18,880 gallons. Motors: 2—467 H.P. Electric Dynamic Co., with Cutler-Hammer Co. magnetic controllers. Batteries: Electric Storage Co. Type 31-WLL. Authorised 1916 as Nos. 78—97. Completed 1918-19.



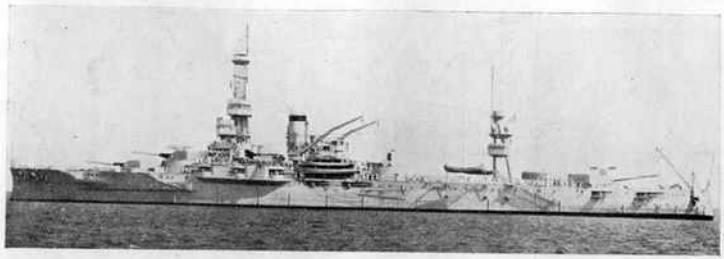
O 1—10. R 1—20.

O 5. 1920 *Photo.*

9 *Electric Boat Co. design*: ***O 1—O 4*** and ***O 6—O 10*** (1917-18), viz., *O 1* by Portsmouth N.Y.: *O 2* by Puget Sound Navy Yard: *O 3*, *O 4* and *O 6—O 10* by Fore River Co. Dims.: 172¾ × 18 × 14½ft. 480/624 tons. **1**—3 inch, 23 cal. AA. gun. **4** torpedo tubes (8 torpedoes). Engines: 2 sets of 440 B.H.P. (400 r.p.m.) 6-cyl. 4-cycle Nelseco Diesel engines. 14·5/11 kts. 10,089/21,897 gallons. Motors: 2—370 H.P. in *O 1*, *O 2*, by New York Navy Yard; in others, by Electric Dynamic Co., all with Cutler-Hammer Co. magnetic controller. Gould storage batteries, Type 29-WLL in *O 1* and *O 2*. Electric Storage Co., Type 49-WL in others. Electric batteries weigh 65 tons. Radius of action: 3500-3000 miles, at 11 kts, *on surface*. Authorised 1915, as Nos. 62—71. Completed 1918.

Note.—*O 5* wrecked, Oct. 28, 1923, and not considered worth repair after salvage.

Training Ship.



1933 *Photo, Official.*

WYOMING (May 26, 1911).
Displacement: 26,000 tons. Dimensions: 562 × 106·1 × 31 feet. Speed 21·2 kts.
Guns: **6**—12"/50. **16**—5"/51, **8**—3"/50 AA. **4**—6 pdr. saluting.
Built by Cramps, sister to *Arkansas*, p. 478. Demilitarised under terms of the Naval Treaty.

Patrol Vessels—Eagles (PE).

EAGLE 17. 1919 *Photo, by courtesy of the Ford Motor Co., Detroit.*

25 "EAGLE BOATS":—

Nos. 10, 11, 12, 15, 19, 22, 26, 27, 32, 35, 36, 38, 39, 44, 46, 47, 48, 51, 52, 55, 56, 57, 58, 59, 60. Launched 1918–19.

Displacement, *normal* 500 tons, *full load* 615 tons. Complement, 61.
Dimensions: Length, 200 feet (*p.p.* and *o.a.*). Beam, 25½ feet. *Mean* draught, 7¼ feet; *full load*, 8½ feet.
Armament: **2**—4 inch (50 cal.), **1**—3 inch AA., **2** M.G. Carry **12** depth charges.
Machinery: Poole geared turbine. 2 Bureau Express boilers. 1 screw. Designed H.P. 2500 = 18 kts. Fuel: 105 tons coal + 45 tons oil. Endurance. 3500 miles at 10 kts.
Notes.—Assembled by Ford Eagle Boat Plant, River Rouge; machinery and fittings by Ford Plant, Highland Park, Detroit. Majority now assigned to Naval Districts and Ports; to Naval Academy; or for duty with U.S.N.R.F.

Patrol Vessels—Submarine Chasers (PC).

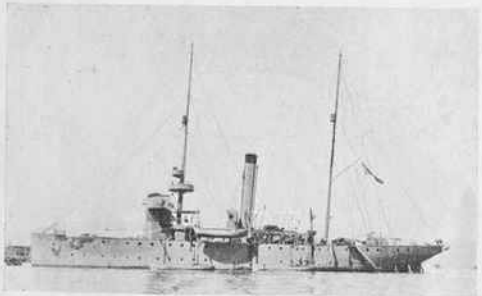
SC. 200. 1919 *Photo.*

25—110 ft. boats:—Numbered between **SC. 57** and **SC. 440.** Built 1917-19 by various Navy Yards and private contractors.
Displacement, 77 tons *normal*, 85 tons *full load*. Wooden hulls. Length, 105 feet (*p.p.*), 110 feet (*o.a.*). Beam, 14 feet 9 in. *Mean* hull draught, 5 feet 6 in., *full load* aft, 5 feet 8 in. Machinery: three sets of 220 B.H.P. Standard petrol motors = 17 kts. 2400 gallons petrol = 900 miles at 10 kts. Complement, 26. Have small radius W/T.
Armaments: Majority have **1**—3 inch (23 cal.), and **2** Colt M.G Carry depth charges.
Notes.—Quick rollers with period of about 5 secs.

Patrol Vessels—Gunboats (PG).

CHARLESTON (No. 5) Charleston N.Y.
ERIE (No. 6) New York N.Y.

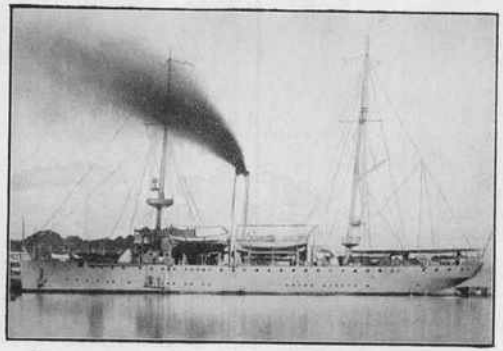
Ordered 1933 under Emergency Programme.



1919 *Photo.*

SACRAMENTO (Feb., 1914). *Normal* displacement, 1425 tons. Complement, 153. Length (*waterline*), 210 feet. Beam, 40⅔ feet. *Mean* draught, 11¼ feet. Guns: **3**—4 inch, 50 cal.; **2**—3 pdr.; **2**—1 pdr. Machinery: 1 set triple expansion. Boilers: 2 Babcock. H.P. (on trials), 1022 = 12·78 kts. Coal: *maximum*, 428 tons. Built by Cramps. Completed, 1914.

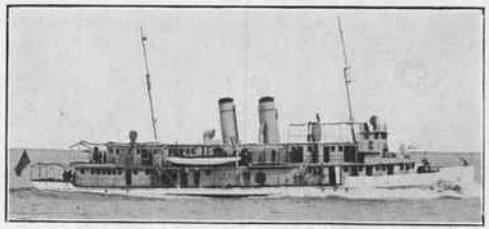
Patrol Vessels—Gunboats (PG)—*continued.*



TULSA. 1925 *Photo, by courtesy of the Navy Dept.*

TULSA (Charleston, N.Y., 25th August, 1922). **ASHEVILLE** (Charleston, N.Y., July, 1918). *Normal* displacement, 1575 tons (*full load*, 1760 tons). Complement, 185. Length (*p.p.*) 225 feet, (*o.a.*) 241½ feet. Beam, 41½ feet. *Mean* draught, 11½ feet. Guns: **3**—4 inch, 50 cal., **2**—3 pdr., **3**—1 pdr. Machinery: Parsons turbine with reduction gear. 1 screw. Boilers: 3 Bureau (modified Thornycroft). Designed H.P. 800 = 12 kts. Fuel, 180 tons coal + 440 tons oil.

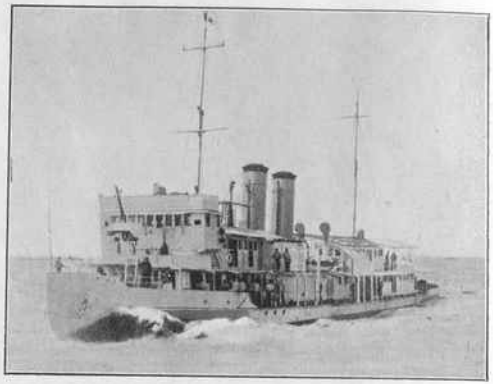
Patrol Vessels—River Gunboats (PR).



GUAM. 1928 *Official Photo.*

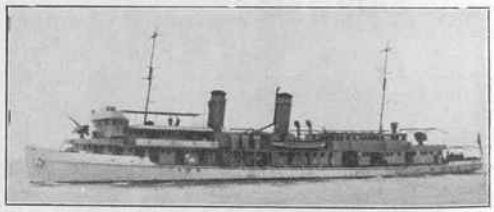
GUAM, TUTUILA. Displacement: 370 tons *standard*. *Mean* draught (fresh water), 5½ feet. Freeboard at side (main deck): Forward, 6 ft. 3 in.; amidships, 3 ft. 5 in.; aft, 4 ft. 2 in. Triple expansion engines, $\frac{12 \times 18 \times 29}{16}$, revs. 320. H.P. 1950 =14.5 kts. Guns: **2**—3 inch, 23 cal., behind shields, **10**—30 cal.

Patrol Vessels—River Gunboats (PR)—*continued.*



PANAY. 1929 *Official Photo.*

OAHU, PANAY. Displacement: 450 tons *standard*. *Mean* draught (fresh water), 5½ feet. Freeboard at side (main deck): Forward, 7 ft. 9½ in.; amidships, 3 ft. 9½ in.; aft, 4 ft. 6 in. Triple expansion engines, $\frac{13\frac{1}{2} \times 22 \times 34}{16}$, revs. 320. H.P. 2250 = 15 kts. (Trials, 17.73 kts). Guns: **2**—3 inch, 50 cal. AA., **10**—30 cal.

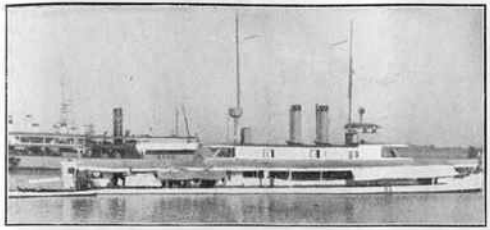


LUZON. 1929 *Official Photo.*

LUZON, MINDANAO. Displacement: 560 tons *standard*. *Mean* draught (fresh water), 6 feet. Freeboard at side (main deck): Forward, 10 ft. 7 in.; amidships, 5 ft. 7 in.; aft, 5 ft. 10 in. Triple expansion engines, $\frac{15 \times 23 \times 36\frac{1}{2}}{18}$, revs. 320. H.P. 3150 = 16 kts. Guns: **2**—3 inch, 50 cal. AA., **10**—30 cal. The following characteristics are common to all six:—2 Thornycroft oil-burning boilers, 250 lbs. working pressure. 2 screws. Lengths of each pair are 150, 180 and 198 feet respectively. Above 6 gunboats authorised 1924 as *PG 47—48*, and laid down 1926 by Kiangnan Dock and Engineering Works Shanghai. Completed, 1927-28.

(*Continued on next page.*)

Patrol Vessels—River Gunboats (PR)—*continued.*

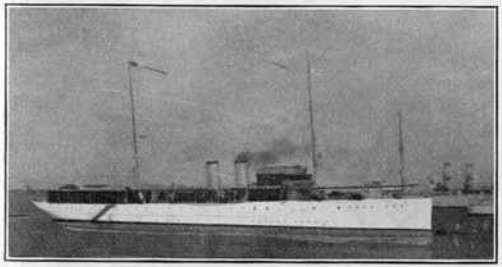


MONOCACY. 1927 *Photo.*

(*Asiatic Fleet.*)

MONOCACY (1914), **PALOS** (1914). 180 tons. Complement, 46. Guns: 2—3 inch 23 cal., 7—30 cal. Machinery: 2 sets vertical compound. Boilers: 2 Babcock. Designed H.P. 800 = 13½ kts. Coal: 34 tons. Built at Mare Island Navy Yard and re-erected by Shanghai Dock and Engineering Co.

Patrol Vessels.



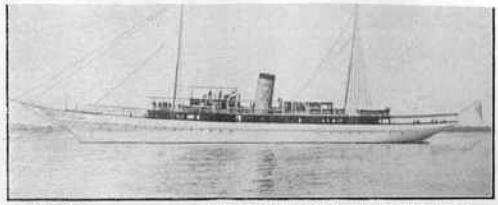
ISABEL. 1927 *Photo.*

ISABEL (Bath I.W., 1917, taken over 1917). 938 tons*. Dimensions: 230 (*w.l.*) × 26¼ × 10½ feet. Guns: 2—3 inch, 50 cal., 2—3 inch, 23 cal. AA. S.H.P. 8400 = 26 kts. Parsons turbine and 2 Normand boilers. Fuel: 216½ tons oil. Complement, 112.

Note.—Was fitted and classed as a Destroyer during the World War.

* Full load.

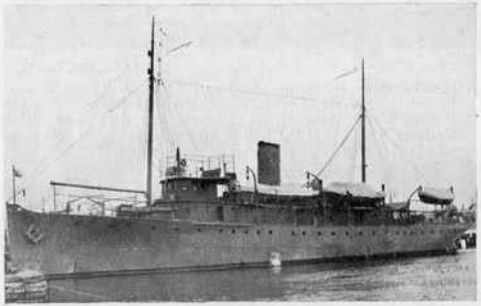
Patrol Vessels—*continued.*



NOKOMIS. 1925 *Photo, by courtesy of the Navy Dept.*

(*On Surveying Service.*)

NOKOMIS (ex-*Nokomis II*, 1917, taken over 1917). 1265 tons. Dimensions: 203 × 31½ × 13⅜ feet. Guns: 2—3 inch, 30 cal., 4—6 pdr. Boilers: 2 Babcock. I.H.P. 2000 = 16 kts. Coal: 350 tons = 1517 miles at 14.7 kts. Complement, 87.



Official Photo: added 1933.

FULTON (June 6th, 1914).

Built by New London Ship Co.

1,160 tons. Dimensions: 226·6 × 35·2 × 11·3 feet.

Guns: 2—3" 50 cal. AA.

Diesels 6 cyl. 4-cycle M.A.N. 1,200 H.P. = 12·3 kts.

Complement, 212.

Patrol Vessels

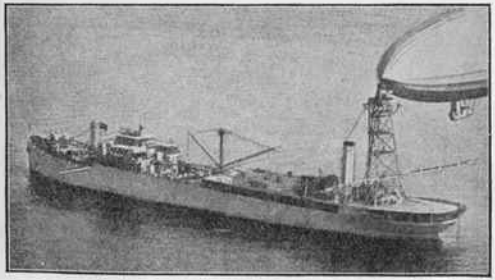
DEPOT SHIPS, AIRCRAFT TENDERS AND MINE LAYERS.

Aircraft Tenders (AV).

Note.—Minesweepers *Gannet*, *Pelican*, *Teal* and *Sandpiper*, have been serving for some time past as Seaplane Tenders.

1924, *Official Photo.*

WRIGHT (ex-Emergency Fleet Corporation Hull *No. 680*, "Type B," launched at Hog Island, April 28th, 1920). Conversion effected by Tietjen & Lang Dry Dock Co., Hoboken, 1920-21. 11,500 tons. Dimensions: 448 (*p.p.* and *o.a.*) × 58 × 27⅞ feet *max.* draught. Guns: **2**—5 inch, 51 cal., **2**—3 inch, 50 cal. AA., **4**—30 cal. Designed S.H.P. 6000 = 15 kts. G.E. Curtis geared turbines and 6 Babcock & Wilcox boilers. Oil: 1629 tons. Complement, 311. Fitted as flagship.

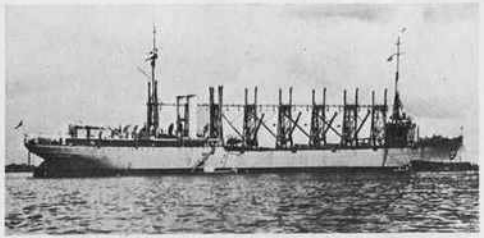


1924 *Official Photo, U. S. Navy.*

PATOKA (1919). For details see *Rapidan* class, p. 491.

Patoka, though classed as an oiler, is fitted with a mooring mast for aircraft and a landing platform for planes. Equipment includes workshops for repair of aircraft and storage for petrol.

Aircraft Tenders.



1932 *Photo, Official.*

JASON (1912). Converted to Aircraft Tender 1930-31. For details (see *Orion*, p. 499).

1932 *Photo, Official.*

AROOSTOOK (Cramps, 1907. Ex-S.S. *Bunker Hill*, of Eastern Steamship Corpn., purchased 1917 and converted by Boston N.Yd. into Mine Planter). All details as *Oglala* Boilers: 8 S.E. H.P. 7000 = 20 kts. Has been employed as Aircraft Tender. Now out of commission.

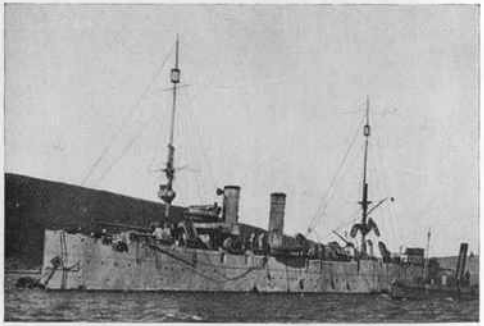
1932 *Photo, Official.*

OGLALA (Cramps, 1907. Ex *Shawmut*, ex-S.S. *Massachusetts*, of Eastern Steamship Corpn., purchased 1917 and converted by Boston N.Yd. into Mine Planter). 4950 tons. Dimensions: 395 (*o.a.*) × 52½ × 14½ feet (*mean*). Guns: **1**—5 inch, 51 cal., **2**—3 inch AA., **2**—6 pdr., **4**—1 pdr. Reciprocating engines and 4 S. E. boilers. 2 screws. H.P. and speed uncertain. Oil: 607 tons. Complement 373.

Mine Layers—Second Line (OCM)—*continued.*

Photo, U.S. Navy

BALTIMORE (Cramps 1888). Displacement, 4413 tons. Complement, 351. Dimensions: 335 (*o.a.*) × 48⅝ × 19½ (*mean*) feet. Guns: **4**—5 inch, 51 cal., **2**—3 inch AA., **4**—6 pdr., **2**—1 pdr. Armour: 4″ deck. H.P. (*trials*) 8777 = 20 kts. Boilers: 8 Babcock. Coal: 1092 tons. Fitted as flagship.

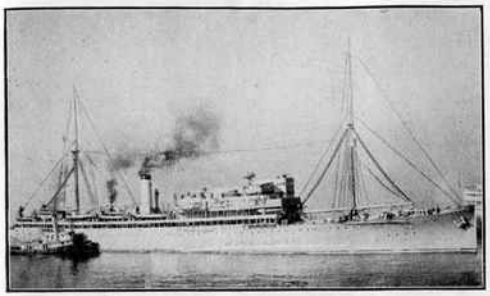


Photo, U. S. Navy.

YOSEMITE (ex-*San Francisco*) (Union Iron Works) (1889). Displacement, 4683 tons. Complement, 349. Dimensions: 324½ (*o.a.*) × 49½ × 18¾ (*mean*) feet. Armament: **3**—5 inch, **2**—3 inch AA., **2**—6 pdr., Carries 300 Mark II mines. 4 searchlights. H.P. (*trials*) 9761 = 19.5 kts. 8 Babcock boilers. Coal: 663 tons. Fitted as flagship.

General Note to this and following pages.—Armaments of U.S. Tenders and Auxiliaries as given below are those authorised, but in a great many cases these are not actually carried under peace conditions.

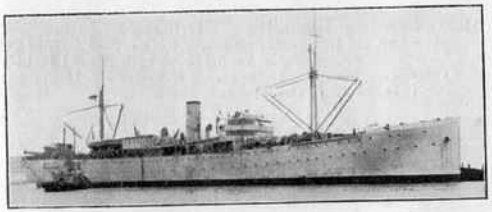
Destroyer Tenders (AD).



DOBBIN. 1925 *Official Photo, U.S. Navy Dept.*

WHITNEY (Boston N.Yd., Oct. 12th, 1923), **DOBBIN** (Philadelphia N.Yd., May 5th, 1921). *12,450 tons. Dimensions: 460 (*p.p.*), 483⅜ (*o.a.*) × 61 × 24⅛ feet (*mean* draught). Guns: 8—5 inch, 4—3 inch AA., 2—6 pdr. Torpedo tubes, for testing purposes: 2—21 inch. Parsons geared turbines. Boilers: 2 Bureau Modified Thornycroft. 1 screw. Designed S.H.P. 7000 = 16 kts. Oil: 1107 tons. Complement, 452. Equipped to serve as Depot, Repair and Hospital Ship for 18 Destroyers. To have special anti-torpedo protection. Generally sister ships to *Holland*, Tender to Submarines. Both fitted as flagships.

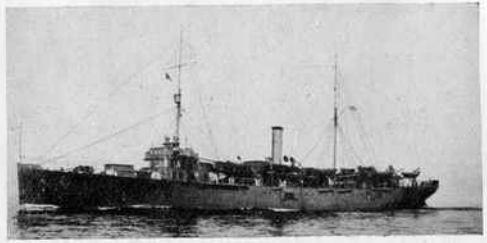
* Full load.



ALTAIR. 1927 *Official Photo.*

ALTAIR (1919), **DENEBOLA** (1919), **RIGEL** (1918). 13,925 tons. Dimensions: 423¾ × 54 × 20 feet. Guns: 4—5 inch, 51 cal., 4—3 inch AA., 2—6 pdr. Curtis geared turbines. Boilers: 3 single-ended. S.H.P. 2500 = 10.5 kts. Oil: 1097 tons. Complement, 481 (*Rigel*, 531). All three built by Skinner & Eddy Corporation, Seattle.

Destroyer Tenders (AD)—*continued.*



1919 *Photo, C. E. Waterman.*

MELVILLE (1915). 7150 tons. Complement, 473. Dimensions: 400 (*p.p.*) × 54½ × 20 feet (*mean* draught). Guns: 8—5 inch (51 cal.), 1—3 inch AA., 2—3 pdr. Torpedo tubes: 1—18 inch. Machinery: Parsons geared turbines. 2 Thornycroft boilers. H.P. (estimated) 4006 = 15.09 kts. Fuel: 930 tons *oil*.

1920 *Photo.*

BLACK HAWK (Cramp, 1913, ex-Grace Steamship Co. S.S. *Santa Catalina*, taken over 1917). 8,900 tons. Dimensions: 404½ (*p.p.*) × 53¾ × 19¾ feet. Guns: 4—5 inch, 2—3 pdr., 2—1 pdr. Boilers: 3 single-ended. I.H.P. 3400 = 13 kts. Oil: 2108 tons. Complement, 471.

Destroyer Tenders (AD)—*continued.*

1920 *Photo, Seward, Weymouth.*

BRIDGEPORT (Vegesack, Germany, 1901, ex-North German Lloyd S.S. *Breslau*, seized 1917). 11,750 tons. Dimensions: 429¼ (*p.p.*) × 54½ × 24⅜ feet. Guns: 8—5 inch, 4—3 inch 50 cal. AA. Boilers: 2 double-ended and 2 single-ended. I.H.P. 3600 = 12.5 kts Coal: 1060 tons. Complement, 552.

Auxiliaries—Submarine Tenders (AS).

Note.—Obsolete Cruiser *Alton*, ex *Chicago*, Submarine Barracks at Pearl Harbour. Various Minesweepers of "Bird" class serve as Submarine Tenders at New London, Hampton Roads; Coco Solo, and Pearl Harbour.

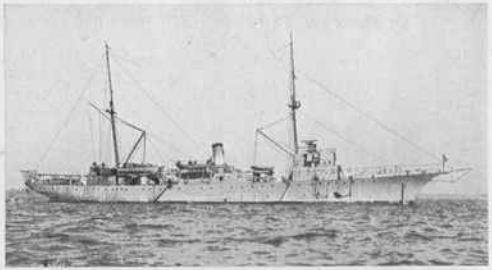
1926 *Official Photo.*

HOLLAND (Puget Sound N. Yd., 1926. Begun Apl. 11th, 1921, completed 1926). 11,570 tons. Dimensions: 513 (*o.a.*) × 61 (*extreme*) × 22¾ feet (*mean* draught). Guns: **8**—5 inch, **4**—3 inch AA., **2**—6 pdr. Torpedo tubes: **1**—21 inch, *submerged*. Parsons geared turbines. 1 screw. Boilers: 2 Bureau Modified Thornycroft. Designed S.H.P. 7000 = 16 kts. Oil: 1050 tons. Complement, 398. Generally sister ship to *Whitney* and *Dobbin*, Destroyer Tenders.

1926 *Official Photo.*

CANOPUS (New York S.B. Co., 1919). 8000 tons. Dimensions: 373¾ × 51½ × 21½ feet. Guns: **2**—5 inch, 51 cal., **4**—3 inch AA., 2—3 pdr. Machinery: Quadruple expansion. 1 screw. Boilers: 4 single-ended. H.P. 3858 = 13 kts. Oil: 1277 tons. Complement, 317.

Auxiliaries—Submarine Tenders (AS)—*continued.*



BUSHNELL. 1919 *U. S. Navy Photo.*

(*Atlantic Fleet.*)

BUSHNELL (Seattle Constrn. and D.D. Co., 1915). 3580 tons. Complement: 217. Dimensions: 350½ × 45⅔ × 15 feet (*mean* draught). Guns: **4**—5 inch (51 cal.). Machinery: Parsons turbines with reduction gear. Boilers: 2 Yarrow. H.P. (*on trials*) 2617 = 14·15 kts. Fuel: 728 tons *oil*.

1920 *Photo.*

BEAVER (Newport News, 1910, purchased 1918). 6250 tons. Dimensions: 380 (*o.a.*) × 47 × 22¾ feet (*max.* draught), Guns: **4**—5 inch, **2**—1 pdr. 1 screw. Boilers: 6 single-ended. I.H.P. 4500 = 16·5 kts. Fuel: 530 tons oil fuel. Complement, 350.

Note.—Has only one funnel now. 1922 *Official Photo.*

CAMDEN (Flensburger S. B. Co., 1900, ex-German-Australian s.s. *Kiel*, seized 1917). 9000 tons (estimated). Dimensions: 403⅔ (*o.a.*) × 48 × 22½ feet. Guns: **4**—4 inch, **2**—3 pdr., **2**—1 pdr. Boilers: 4 Babcock. I.H.P. 2550 = 12 kts. Coal: 975 tons. Complement, 378.

Auxiliaries—Submarine Tenders (AS)—*continued.*

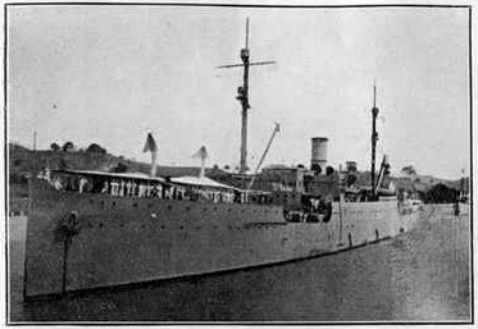
1920 *Photo.*

SAVANNAH (Flensburger S. B. Co., 1899, ex-Hamburg-American S.S. *Saxonia*, seized 1917). 8570 tons. Dimensions: 414½ × 46 × 21⅔ feet. Guns: **4**—5 inch, **4**—3 inch AA., **4**—30 cal. Boilers: 4 Babcock. I.H.P. 2000 = 10·5 kts. Coal: 743 tons + 531 tons additional stowage = 1274 tons. Complement, 383.

ARGONNE. 1930 *Photo, Lt.-Com. H. A. Gosnell, U.S.N.*

ARGONNE (Hog Island, 1920). 11,100 tons. Dimensions: 448 × 58 × 24⅔ feet *max.* draught. Guns: **4**—5 inch 51 cal., **4**—3 inch, 50 cal. AA., **2**—6 pdr. Curtis geared turbines. 1 screw. Boilers: 6 Babcock. S.H.P. 6000 = 15 kts. Oil fuel: 1473 tons. Complement, 344.

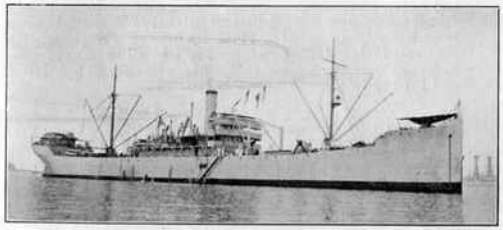
Auxiliaries—Repair Ships (AR)—*continued.*



PROMETHEUS. 1926 *Photo, Ian Perman, Esq.*

PROMETHEUS (Mare Island N.Yd., 1908). **VESTAL** (New York N. Yd., 1908). 8100 tons, full load. Dimensions: 450 × 60 × 18 feet. Guns: **4**—5 inch, 50 cal., **1**—3 inch AA., **4**—30 cal. Boilers: *Prometheus*, 6 Babcock; *Vestal*, 2 White-Forster. Weight of machinery: *Prometheus*, 1100 tons; *Vestal*, 789 tons. H.P. 7500 = 16 kts. Oil: *Prometheus*, 872 tons; *Vestal*, 1412 tons. Complement, 466.

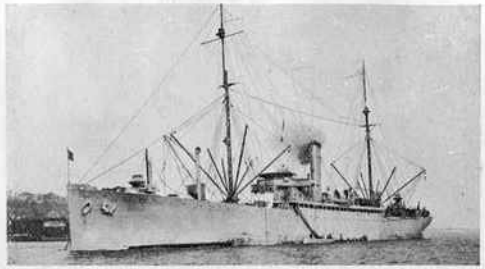
Auxiliaries—Store Ships (AF).



ARCTIC. 1926 *Official Photo.*

ARCTIC (1919), **BOREAS** (1919), **YUKON** (1920). 12,600 tons. Dimensions: 416½ × 53 × 26½ feet. Guns: **2**—5 inch, 51 cal., **4**—3 inch AA. (not always carried). Parsons geared turbines in *Arctic* and *Yukon*, Curtis in *Boreas*. Designed H.P. 2800 = 11 kts. Boilers: 4 Heine, except *Yukon*, 3 single-ended. Oil: 1794 tons. Complements: 166 (*Y*), 180 (*B*), 211 (*A*).

Auxiliary—Store Ships (AF)—*continued.*



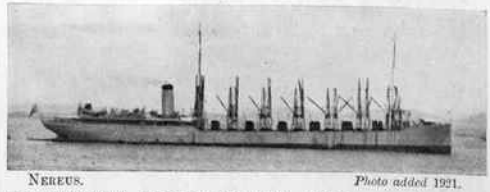
1919 *Photo.*

BRIDGE (Boston N.Yd., May 18th, 1916). 8500 tons. Complement, 212. Dimensions: 423 × 55½ × 20¾ feet (*mean* draught). Guns: **4**—5 inch, 50 cal., **1**—3 inch AA., **2**—3 pdr. Boilers: 2 White-Forster. H.P. 4000 = 14 kts. Reciprocating engines. 2 screws. Fuel: 1000 tons *oil*.

RAPPAHANNOCK. 1927 *Official Photo.*

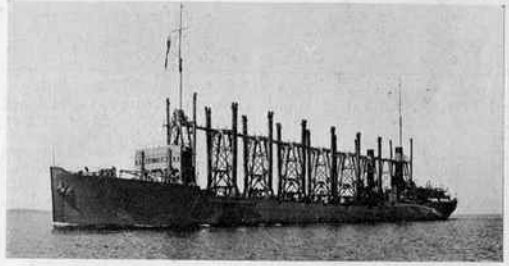
RAPPAHANNOCK (Bremer-Vulkan, Vegesack, Germany, 1913, ex-North German Lloyd S.S. *Pommern*, seized 1917). 15,200 tons. Complement, 291. Dimensions: 471⅛ × 59⅛ × 24½ feet. Guns: **4**—5 inch, 51 cal., **1**—3 inch AA. Boilers: 4 single-ended. I.H.P. 4850 = 11.5 kts. Coal: 3060 tons.

Auxiliaries—Colliers (AC)



NEREUS. *Photo added 1921.*

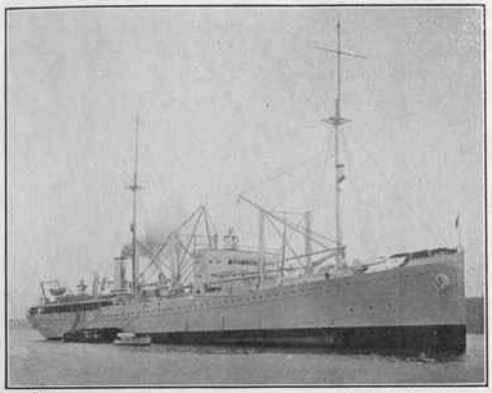
NEREUS (1913), **PROTEUS** (1912). 19,030 tons. Dimensions: 522 × 62 × 27¾ (*mean*). 2 screws. Boilers: 3 double-ended. H.P. 7000 = 14·5 kts. Fuel capacity (deadweight to designed draft): 10,500 tons cargo fuel, Bunker capacity, 1,925 tons. *Maximum* cargo capacity (close stowage): 11,800 tons coal + 1125 tons oil *or* 10,100 tons coal + 3050 tons oil. Guns: **4**—4 inch 50 cal. Complement, 181.



1919 *Photo, O. W. Waterman.*

NEPTUNE (1911). 19,480 tons. Dimensions: 542 × 65 × 27¾ (*mean*). 2 screws. Boilers: 3 double-ended. S.H.P. 5400 = 13 kts. Fuel capacity (deadweight to designed draft): 10,500 tons cargo fuel + 2000 tons own bunker fuel. *Maximum* cargo capacity (close stowage): 10,200 tons coal + 2925 tons oil *or* 11,700 tons coal + 1250 tons oil. Guns: **4**—4 inch. Has Westinghouse geared turbines. Complement, 181.

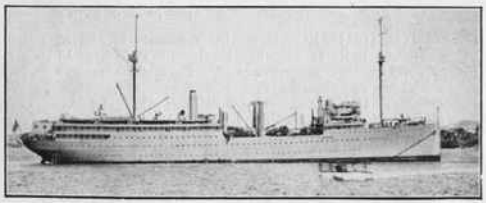
Auxiliaries—Ammunition Ships (AE).



PYRO. 1921 *Official Photo.*

NITRO, PYRO (both launched Dec. 16th, 1919, at Puget Sound N.Yd.). 10,600 tons. Dimensions: 460 × 61 × 21 feet. Guns: **4**—5 inch, **2**—3 inch AA. Boilers: 4 Babcock. S.H.P. 6700 = 13.3 kts. (*N.*), 13.2 kts. (*P.*). Parsons (geared) turbines. 2 screws. Fuel capacity: 1078 tons coal (*Nitro*), 1493 tons oil (*Pyro*). Fitted with plant for powder testing and cooling, also large cold storage capacity for meat, in addition to ammunition-carrying spaces. Complement, 195.

Auxiliaries—Repair Ships—(AR).



1925 *Photo, W. W. Stewart, Esq.*

(*Pacific Fleet.*)

MEDUSA (Puget Sound N.Yd., April 16th, 1923). 10,620 tons. Dimensions: 460 × 70 × 20 feet. Guns: **4**—5 inch, 51 cal., **2**—3 inch AA., **2**—6 pdr., **4**—30 cal. Parsons geared turbines. Designed S.H.P. 7000 = 16 kts. 2 Bureau Modified Thornycroft boilers. Oil: 1834 tons. Complement, 466 (including an exceptionally full technical staff).

Note.—The *Medusa* was specially designed with a view to the execution of permanent as well as temporary repairs. She carries two 8 ton derricks, besides one 20 ton, one 10 ton and two 8 ton shear legs. Machinery is installed aft. Equipment includes a medical and hospital section.

Auxiliaries—Oilers (AO).

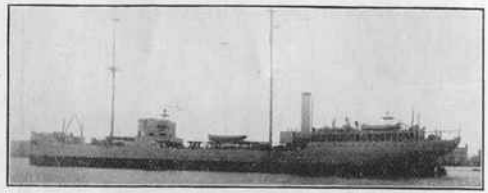
TRINITY. 1927 *Official Photo.*

RAPIDAN (1919), **SALINAS** (1920), **TIPPECANOE** (1920), **RAMAPO** (1919), **SAPELO** (1919), **SEPULGA** (1920), **TRINITY** (1920). 16,800 tons. Dimensions: 463½ (*p.p.*) × 60 × 26¼ feet (*mean* draught). Quad. Exp. reciprocating engines.† 3 S. E. boilers. I.H.P. 2900 = 10·5 kts. Guns: **2**—5 inch, 51 cal., **2**—3 inch AA. *Max.* cargo capacity: 11,145 tons oil fuel. Own fuel: 1109 tons oil. Complement, 107 (*Patoka* 156).

†Curtis turbine in *Trinity* and *Tippecanoe*.

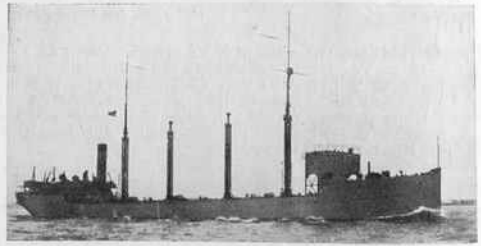
KAWEAH (1919), **LARAMIE** (1920), **MATTOLE** (1920), 14,450 tons. Dimensions: 446 (*o.a.*) × 58 × 25½ feet. Guns: **2**—5 inch, 51 cal., **2**—3 inch AA. Reciprocating engines and 3 S. E. boilers. H.P. 2800 = 11 kts. Cargo capacity, 8850 tons. Own fuel, 1288 tons. Complement, 107.

Auxiliaries—Oilers (AO)—*continued.*



BRAZOS. 1927 *Official Photo.*

BRAZOS (1919), **NECHES** (1920), **PECOS** (1921), all three by Boston N. Yd. 14,800 tons. Dimensions: 475¾ (*o.a.*) × 56 × 26⅜ feet *mean*. Recipro. engines. 4 B. & W. boilers in *Brazos*, 4 Ward in each of others. 2 screws. I.H.P. 6000 = 14 kts. Cargo capacity, 8050 tons. Own fuel, 828 tons. Guns: **4**—5 inch, 51 cal., **2**—3 inch. Complements: 136 (*B.*), 117 (*N.*), 156 (*P.*).



KANAWHA (& MAUMEE). 1919 *Photo, O. W. Waterman.*

CUYAMA (1916), **MAUMEE** (1915), **KANAWHA** (1914). 14,500 tons. Dimensions: 475½ × 56 × 26¼ (*mean*). *Cuyama* and *Kanawha* reciprocating engines, 5590 H.P. *Maumee* 2-cycle Diesel motors 5000 H.P. Boilers: 2 Babcock in *Maumee*, 4 Babcock in each of others. Speed: 14 kts. 2 screws. Fuel capacity: 8050 tons cargo oil; 824 tons own bunker oil. Guns: *Cuyama* **4**—5 inch; *Maumee*, *Kanawha* **4**—4 inch. Complements: 136 (*C.* and *K.*) 146 (*M.*).

Auxiliaries—Oilers (AO)—*continued.*

SARA THOMPSON (ex-s.s. *Gut Heil*, Armstrong, 1888, purchased 1918). 5850 tons. Dimensions: 321 × 40½ × 21⅝ feet. I.H.P. 1300 = 9 kts. Cargo capacity: 3826 tons. Own fuel: 494 tons (drawn from cargo holds). (Used as receiving ship at Cavité.) Complement, 70.

ROBERT L. BARNES (1917, acquired 1918). 3850 tons. Dimensions: 258½ (*o.a.*) × 43⅜ × 15 feet. I.H.P. 1100 = 8.5 kts. Capacity: 1806 tons. Own fuel, 103 tons. (Used for Oil Storage, Guam.) Complement, 67.

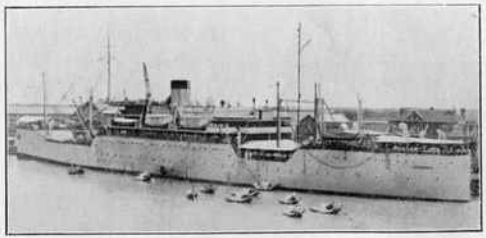
Auxiliaries—Cargo Ships (AK).

(For appearance, see *Antares* under Auxiliaries—Miscellaneous.)

CAPELLA (1920), **SIRIUS** (1919), **SPICA** (1919), **VEGA** (1919). 11,450 tons. Dimensions: 401 × 54 × 24½ feet. Guns: **2**—5 inch, 51 cal., **4**—3 inch AA. Curtis geared turbines. 3 Babcock boilers. H.P. 2500 = 11.5 kts. Oil: 1222 tons. Complement, 106.

REGULUS (1920). 10,550 tons. Dimensions: 392 × 52 × 24 feet. Guns: **2**—5 inch, 51 cal., **4**—3 inch AA. Recipro. engines, 3 single-ended boilers. H.P. 2500 = 11 kts. Oil: 1180 tons. Complement, 106.

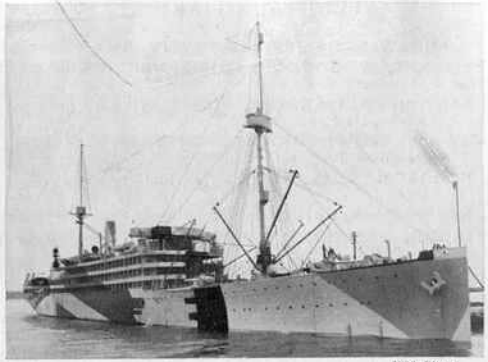
Auxiliaries—Transports (AP).



1929 *Official Photo.*

CHAUMONT (Hog Island, 1920). 10,700 tons. Dimensions: 448 × 58 × 23 feet. Guns: *Nil.* 1 screw. G.E. Curtis geared turbines. Boilers: 6 Babcock. S.H.P. 6000 = 15 kts. Oil: 1473 tons. Complement, 249.

Auxiliaries—Transports (AP)—*continued.*



1920 *Photo*

HENDERSON (1916). 10,000 tons. Complement, 424. Dimensions: 483⅜ (*o.a.*) × 61 × 20 feet (*mean* draught). Guns: **8**—5 inch, 51 cal., **2**—3 inch, **2**—3 pdr., **2**—1 pdr. H.P. 4000 = 14 kts. Reciprocating engines. Boilers: 3 Babcock. 2 screws. Fuel: 1400 tons *oil*. Has Sperry gyro. stabilisers. To take 2000 men and 32 horses.

Note.— A second transport, *Heywood*, of same dimensions as *Henderson*, was authorised for construction several years ago, but there appears to be no prospect of her being laid down for some time to come.

Auxiliaries—Hospital Ships (AH).

RELIEF. 1927 *Official Photo.*

RELIEF (Dec., 1919, Philadelphia N.Y.). 9800 tons. Dimensions: 460 (*p.p.*) × 61 × 19½ feet. Designed H.P. 5250 = 16 kts. Parsons (geared) turbines. 2 screws. 3 Babcock and Wilcox boilers. Oil: 1951 tons. Complement, 397.

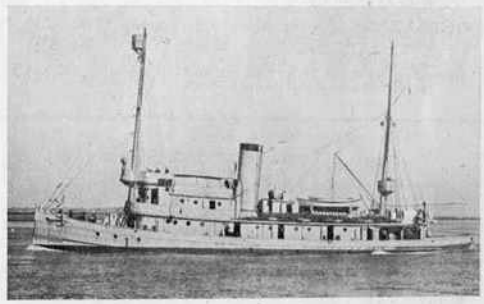
Auxiliaries—Hospital Ships (AH)—*continued.*

1920 *Photo.*

MERCY (ex-Ward Liner *Saratoga*, built by Cramp, 1907), 9,450 tons. Complement, 377. Dimensions: 429⅝ (*o.a.*) × 50½ × 22⅜ feet. Boilers: 8 S.E. I.H.P. 8500 = 18 kts. Coal: 1776 tons. Purchased 1917.

Auxiliaries—Oceangoing Tugs (AT).

BAY SPRING (1920). About 800 tons. Dimensions: 150 (*o.a.*) × 27⅞ × 14 feet. Guns: *nil.* H.P. 850 = 11 kts.



PINOLA. 1932 *Photo, Official.*

ALGORMA, BAGADUCE, CONTOCOOK, IUKA, KALMIA, KEOSANQUA, KEWAYDIN, KOKA, MAHOPAC, MONTCALM (ex-*Kineo*), **NAPA, PINOLA, SCIOTA, SUNNADIN, TADOUSAC, TATNUCK, UMPQUA, WANDANK.** All launched 1919-20. **ALLEGHENY** (1917). **SAGAMORE** (1917). 1000 tons. Dimensions: 149½ (*p.p.*) × 30 × 14⅝ feet. Guns: 2—3 inch AA. I.H.P. 1800 = 13 to 14 kts. Oil: 279 tons.

UNDAUNTED (1917). 450 tons. Guns: 1—3 inch AA. I.H.P. 1000 = 11.5 kts. Oil fuel 329 tons.

CHEMUNG (ex-*Pocahontas*, 1916), **WANDO** (1916). 575 tons. Dimensions: 123½ (*o.a.*) × 26⅝ × 11½ feet. Guns: **2**—3 pdr. H.P. 800 = 11 kts. Oil fuel 147 tons.

ARAPAHO (1914), **TILLAMOOK** (1914). 575 tons. Guns: 2—3 pdr. H.P. 800 = 10 to 11 kts. Oil: 142 tons.

Auxiliaries—Oceangoing Tugs (AT)—*continued.*

LYKENS (1899). *About* 1000 tons. Dimensions: 157 (*p.p.*) × 29 × 15 feet. Guns: **1**—3 inch. H.P. 1000 = 14 kts.

SONOMA (1912) and **ONTARIO** (1912). 1120 tons. Dimensions: 175 (*p.p.*) × 34 × 12½ feet (*mean*). Guns: **1**—3 inch, **1**—3 inch AA. Speed: 13 kts. Coal: 440 tons (*average*).

PATAPSCO (1908), **PATUXENT** (1908). 755 tons. Dimensions: 148 (*p.p.*) × 29 × 12¼ feet. Guns: **1**—3 inch AA. H.P. 1160 = 13 kts. Coal: 324 tons.

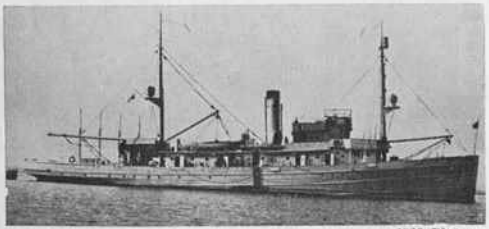
GENESEE (ex-*Monocacy*, 1905, bought 1917). 1000 tons. Guns: 2—3 inch. I.H.P. 1000 = 15 kts. Coal: 286 tons.

NAVAJO (ex-*General Hubbard*, bought 1907). 800 tons. Dimensions: 141¼ (*o.a.*) × 27½ × 14 feet. Guns: **2**—3 pdr. H.P. 935 = 12 kts.

CHALLENGE (ex-*Defiance*, 1889, bought 1918). 515 tons. Guns: **2**—3 pdr. Speed: 14 kts.

Notes.—Carrabasset has been transferred to Coast Guard. Other and Smaller Tugs attached to Naval Districts, rated as "Harbor Tugs."

Mine Vessels—Mine Sweepers (AM).



1920 *Photo.*

("Bird" Class—43 Boats.)

LAPWING, OWL, ROBIN, SWALLOW, SANDERLING, CHEWINK, CORMORANT, GANNET (all built by Todd S. B. Co., Tebo Yacht Basin, Brooklyn, N. Y.).

TANAGER, ORIOLE, GREBE, MALLARD, ORTOLAN, PEACOCK (all built by Staten Id. S.B. Co., N. Y.).

AVOCET, BOBOLINK, LARK, PIGEON (all built by Baltimore D. D. & S. B. Co.).

PELICAN, FALCON, SEAGULL, TERN (all built by Gas Engine & Power Co., Morris Heights, N. Y.).

Mine Vessels—Mine-Sweepers (AM)—*continued.*

TURKEY, WOODCOCK, QUAIL, PARTRIDGE (all built by Chester S. B. Co.).

SANDPIPER, WARBLER, VIREO, WILLET (all built by Philadelphia Navy Yard).

SWAN, WHIPPOORWILL, BITTERN (all built by Alabama S. B. & D. D. Co., Mobile).

WIDGEON, TEAL, BRANT (all built by Sun S. B. Co., Chester).

KINGFISHER, RAIL (both built by Puget Sound Navy Yard).

EIDER, THRUSH (both built by Pusey & Jones, Wilmington).

FINCH, HERON (both built by Standard S. B. Co., N. Y.).

PENGUIN (built by New Jersey D. D. & T. Co., Elizabethport).

All built 1918-19. Displacement: 950 tons *normal*. Dimensions: 187⅝ (*o.a.*) × 35½ × 9⅝ feet (*mean* draught). Guns: **2**—3 inch AA. Machinery: 1 set triple expansion and 2 B. & W. boilers. Designed I.H.P. 1400 = 14 kts. Oil fuel only: 275 tons. Complement, 59.

Notes.—Gannet, Pelican, Sandpiper and *Teal* sometimes serve as Aircraft Tenders, when each carries a seaplane aft: *Chewink, Ortolan, Seagull, Quail*, are Submarine Tenders; *Pigeon* and *Penguin* are engaged in patrolling Chinese rivers; *Reducing* has been transferred to Coast Guard; *Falcon, Mallard, Ortolan, Pigeon, Widgeon* equipped as Submarine Rescue Vessels; *Whippoorwill* at Pearl Harbor.

Auxiliaries—Miscellaneous (AG).

Antares. 1921, *Official Photo.*

ANTARES, EMPIRE STATE (ex-*Procyon*, both 1919). All details as *Capella* class of Cargo Ship, described on an earlier page, except complement, 197. *Procyon* is loaned to State of New York for School Ship; *Antares* flagship Training Squadron, Scouting Fleet, Atlantic, and is fitted as Target Repair Vessel, carrying special photographic apparatus for recording results of target practice.

GOLD STAR (ex-*Arcturus*, 1920). All details as Cargo Ship *Regulus*, described on an earlier page, except complement, 124.

Auxiliaries—Miscellaneous (AG)—*continued.*

Photo added 1920.

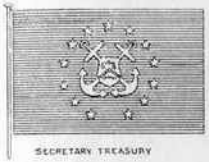
HANNIBAL (ex-S.S. *Joseph Holland*, 1898). Ex-Fuel Ship. 3550 tons. Dimensions: 274 × 39¼ × 15½ feet. Guns: 1—6 inch 40 cal., **2**—3 inch AA. Complement, 163. H.P. 1100 = 9 kts. Coal: 855 tons. Has been used for Surveying Duties.

For Duty with Naval Reserves.

Ex-Battleship *Illinois;* Monitor *Cheyenne;* obsolete Gunboats *Wheeling, Dubuque, Paducah, Topeka, Wilmington, Essex, Wilmette;* old Yacht, *Hawk*, various Eagle Boats and Submarine Chasers previously described. *Annapolis:* loaned to Pennsylvania State as a School Ship.

Notes.

Officially Revised, 1933, from materials furnished by courtesy of the Commandant, U.S. Coast Guard, Treasury Department, Washington, D.C. Photos also official unless otherwise acknowledged.



SECRETARY TREASURY

COAST GUARD STANDARD.

ASST SECRETARY TREAS.

COMMANDANT'S FLAG.

ENSIGN

I.—ESTABLISHMENT.

The U.S. Coast Guard was established by the consolidation of the Revenue-Cutter Service and the Life Saving Service by the Act of Congress approved 28 January, 1915. This act constituted the Coast Guard as a part of the military forces of the United States, "which shall operate under the Treasury Department in time of peace and operate as a part of the Navy in time of war or when the President shall so direct."

II.—DUTIES.

1. The Principal duties of the Coast Guard are the enforcement of the maritime laws of the United States and the saving of life and assistance to vessels in distress.
2. Law enforcement duties, performed for all departments of the government, include those relating to customs, movements and anchorage of vessels, immigration, quarantine, neutrality, navigation and other laws governing merchant vessels and motor boats, safety of life on navigable waters during regattas, oil pollution, sponge fisheries, protection of game and the seal and other fisheries in Alaska, protection of bird reservations established by Executive Order and the suppression of mutinies.
3. Life saving and assistance duties include the maintenance of coastal stations and communication lines on the continental coasts of the United States, the conduct of the International Ice Patrol, derelict destruction, winter cruising on the Atlantic coast, the extension of medical aid to fishing vessels, the Bering Sea Patrol, and flood relief work. In its humanitarian duties the Coast Guard renders aid and assistance to vessels in distress irrespective of nationality and extends its protection, if needed, to all shipping within the scope of its operations.
4. In time of war the Coast Guard operates as a part of the Navy. A military organization was adopted at the time the service was established in 1790, before the establishment of the Navy Department. This organization has been continued since that date for the purpose of maintaining the general efficiency of the operation of the service in its law enforcement duties in time of peace. The executive action under which the Coast Guard operates as a part of the Navy in time of war is similar in effect to a measure of mobilization. In this respect the Coast Guard is a potential reserve force for the Navy. No personnel are normally assigned or equipped as land troops. Vessels are prepared in emergencies to equip landing forces with small arms and machine guns; stations are similarly prepared to undertake emergency police duties in a more limited sense, because of the smaller units involved, but in both cases these duties would be incidental to the primary purpose of the service, the enforcement of civil law and the saving of life and property.

III.—ADMINISTRATION.

Secretary of the Treasury: The Honorable William H. Woodin.
*Assistant Secretary of the Treasury**: The Honorable Stephen B. Gibbon.

Headquarters:
Commandant: Rear Admiral Harry G. Hamlet.
Assistant Commandant (Operations).
Administrative Division.
Division of Finance.
Supplies and Accounts Office.
Information Office.
Maintenance Office.
Personnel Office.

Boards (Life-Saving Appliances, Inter-Departmental Board on International Service of Ice Observation, Ice Patrol and Ocean Derelict Destruction).

* The Assistant Secretary has immediate supervision of the Coast Guard.

IV.—ORGANIZATION.

1. The organization of the service, based on a plan inaugurated 6 December, 1932, to secure a reduction in operatings cost through consolidation, is as follows:
   (*a*) The United States and its coastal waters are divided into four major areas, each being the command of an area commander operating directly under Coast Guard Headquarters at Washington. These areas are further sub-divided into nine divisions which in turn include thirteen districts for the operation of 276 Coast Guard (Life Saving) Stations and the vessels and shore establishments assigned.
   (*b*) The following training, repair, and supply establishments are maintained:
   (1) Coast Guard Academy, New London, Connecticut. Four year course for cadets (entry by competitive examination).
   (2) Coast Guard Receiving Unit and the Coast Guard Institute, New London, Connecticut. Training and educational courses for enlisted ratings.
   (3) Coast Guard Depot, Curtis Bay, Maryland. Construction of life-boats, etc. Repair of vessels.
   (4) Coast Guard Stores, Brooklyn, New York, and San Francisco, California. Supply depots for ships and stations.

IV.—PERSONNEL.

(Total authorized complement, 11,137).

Uniform similar to U.S. Navy, but C.G. Shield replaces Naval Star on sleeve and shoulder.

Ranks: Rear Admiral (1).
Engineer-in-Chief (Ranks as Captain) (1).

	Line	Engineering	Constructor	District Commander
Captain	21	15	—	—
Commander	43	18	—	—
Lieutenant Commander ..	78	3	1	7
Lieutenant	96	—	3	7
Lieutenant (j.g.)	36	—	—	—
Ensign	135	—	—	—

Chief Warrant Officers: 84.

Warrant Officers, total 710. Pay of Commissioned and Warrant Officers as equivalent grades U.S.N. Age limit, 64.

Petty Officers and Men: 9,800. Enlist for 2 or 3 years; pay as U.S.N.

V.—VESSELS.

The vessels in commission on 1 July, 1933, consisted of 37 cruising cutters, 33 harbour tugs, 8 destroyers belonging to the Navy and at present on loan to the Coast Guard, the *Kankakee* (a stern-wheel river boat), the *Pequot* (a cable boat), 134 patrol boats, and a number of small picket boats.

VI.—AVIATION.

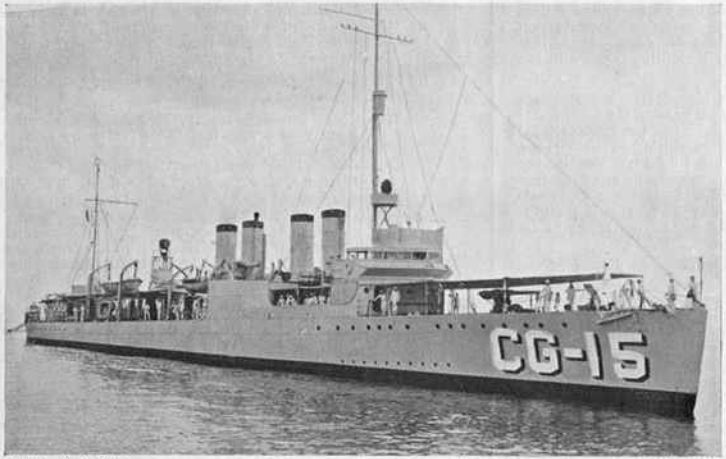
The air stations and aircraft in commission on 1 July, 1933, comprised the following:

(1) Air stations, 3; location, Gloucester, Massachusetts; Cape May, New Jersey; Miami, Florida.

(2) Aircraft in operation, 11 seaplanes, 2 UO seaplanes, 1 Viking Flying Boat, 3 Douglas amphibians, 5 FLB Flying Boats.

COAST GUARD DESTROYERS (Transferred from Navy Department).

6 Flush Deckers.



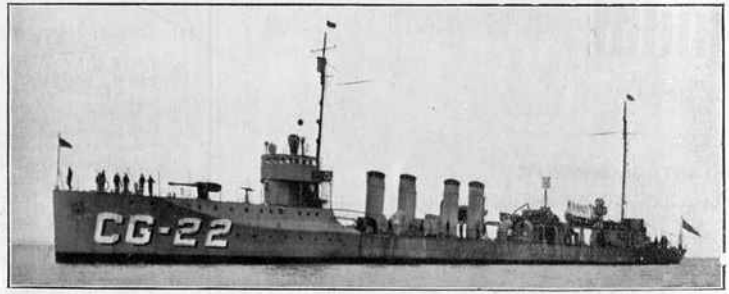
ABEL P. UPSHUR. 1931 *Photo.*

6 *Newport News*: **Semmes, Geo. E. Badger, Herndon, Hunt, Abel P. Upshur, Welborn C. Wood.** All built 1920. Displacement: 1215 tons (1308 *full load*). Dimensions: 314¼ × 31 × 9¾ feet. S.H.P. 28,000 = 35 kts. Westinghouse geared turbines. 4 White-Forster boilers, 27,500 square feet heating surface. 2 screws. Guns: 3—4 inch, 50 cal., 1—1 pdr.

"1000 Tonners."

1931 *Photo.*

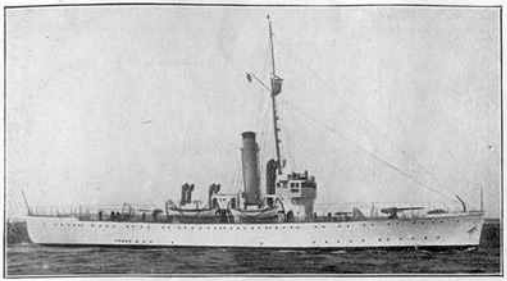
1 *New York S.B. Co.*: **Wainwright** (1915). 910 tons (1265 *full load*). Designed H.P. 17,000 = 29½ kts. Parsons geared (cruising on port shaft only) turbines. Machinery averages 369 tons. Boilers: 4 Normand—21,500 sq. ft. heating surface. Trials: 29·67 kts. Oil: 308 tons. Guns: 3—4 inch, 50 cal. 1—1 pdr.



1928 *Photo, Lieut.-Com. G. Finlay, U.S.C.G.*

1 *Cramp*: **Wilkes** (1916). 920 tons (1124 *full load*). Designed H.P. 17,000 = 29·5 kts. Parsons geared (cruising on starboard shaft only) turbines. Machinery weighs 367 tons. Boilers: 4 White-Forster. Trials: 29·58 kts. Guns: 3—4 inch, 50 cal., 1—1 pdr.

Cruising Cutters



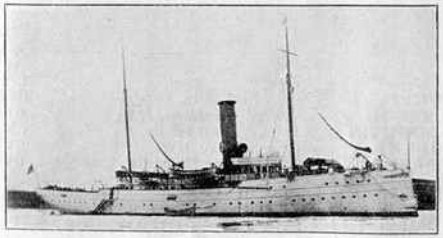
CHELAN. 1929 *Photo.*

Name.	*Station.*	*Signal Letters.*
ITASCA	*Honolulu T.H.*	**GVDM.**
SEBAGO	*Stapleton N.Y.*	**GNDT.**
SARANAC	*Galveston Texas*	**GVDN.**
SHOSHONE	*S. Francisco, Cal.*	**GVFM.**
CAYUGA	*Boston, Mass.*	**GBDS.**

Built 1930 by Gen. Eng. & Dry Dock Co., Oakland.

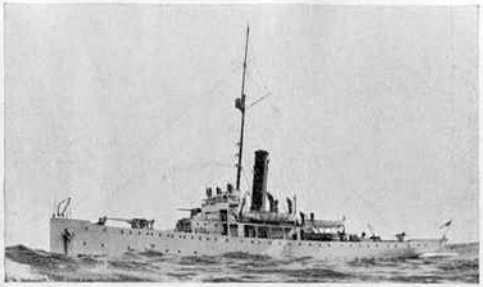
CHELAN	*Seattle, Wash.*	**GVKN.**
CHAMPLAIN	*Stapleton, N.Y.*	**GNDR.**
MENDOTA	*Norfolk, Va.*	**GNDS.**
PONTCHARTRAIN	*Norfolk, Va.*	**GVKP.**
TAHOE	*San Francisco, Calif.*	**GNDQ.**

All built 1928-29 by Bethlehem Shipbuilding Corporation at Quincy, Mass. Steel, 1 Screw. 1975 tons. Dimensions: 250 (*o.a.*) × 42 × 16 feet. Turbine-Electric engines (1 main, 2 auxiliary). H.P. 3220=16 kts. Guns: **1**—5 inch, **1**—3 inch, AA., **2**—6 pdr. Radius 8,000 miles.



GRESHAM (1897). Steel, 1 screw. 1090 tons. Dimensions: 205½ × 32 × 12½ feet. Speed: 14 kts. Guns: **2**—3 inch, 50 cal., **2**—6 pdr., **1**—1 pdr. (*Mobile Ala.* **GVFD.**)

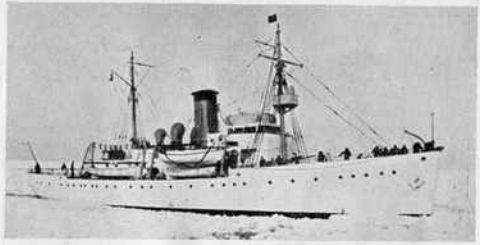
Cruising Cutters—*continued.*



TAMPA.

Name.	*Station.*	*Signal Letters.*
HAIDA	*Seattle, Wash.*	**GVKW.**
MODOC	*Wilmington, N.C*	**GVBR.**
MOJAVE	*Boston. Mass.*	**GVBT.**
TAMPA	*Stapleton, N.Y.*	**GVKT.**

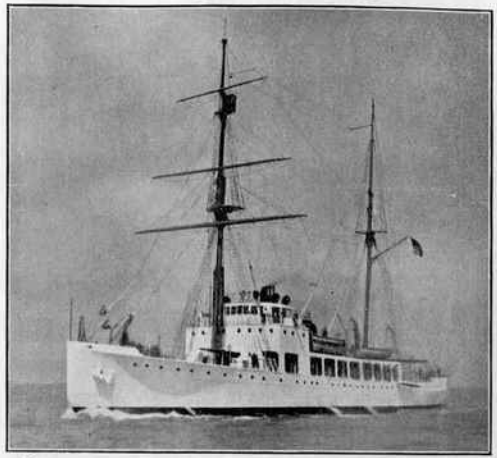
All built 1921. Steel, 1 screw. 1780 tons. Dimensions: 240 × 39 × 16½ feet. Guns: **2**—5 inch, **1**—3 inch AA., **2**—6 pdr. S.H.P. 2600 = 15 kts. Machinery: Turbo-electric (General Electric Curtis Turbine).



ESCANABA. 1933 *Photo.*

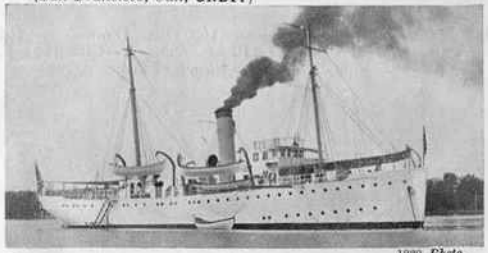
The ice-breaking cutter, **ESCANABA,** completed 1932, Defoe Works, Bay City, Michigan. Steel, 1 Screw. 1005 tons. Dimensions: 165 (*o.a.*) × 36 × 13 feet. Turbine double reduction gear. H.P. 1500. Speed 13.4 knots. Radius 5,079 miles. Guns: **2**—6 pdr. (*Grand Haven, Michigan,* **GVHF.**)

Cruising Cutters—*continued.*



NORTHLAND. *Photo added* 1927.

NORTHLAND (Newport News Shipbuilding Co., 1927). Built of steel, hull being of exceptionally massive construction, to withstand ice pressure. Forefoot cut away to above w.l. Displacement: 2065 tons. Dimensions: 216 (*o.a.*) × 39 × 15 feet (*mean* draught). Two 6-cyl. 4-cycle Diesel engines with electric drive. Total B.H.P. 1200 = 11 kts. 1 screw. Guns: **2**—4 inch, 50 cal., **2**—6 pdr. For Bering Sea Patrol. (*San Francisco, Cal.,* **GNDP.**)



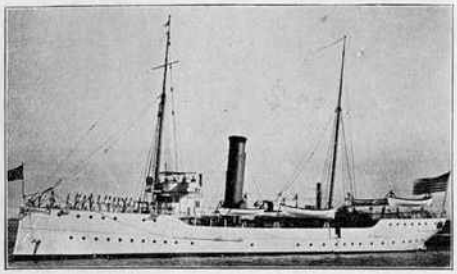
1920 *Photo.*

OSSIPEE (1915). Steel, 1 screw. 964 tons. Dimensions: 165⅝ × 32 × 11⅞ feet. Speed: 12 kts. Guns: **2**—3 inch, **2**—6 pdr. **2**—1 pdrs. (*Portland, Me.* **GVBW.**)

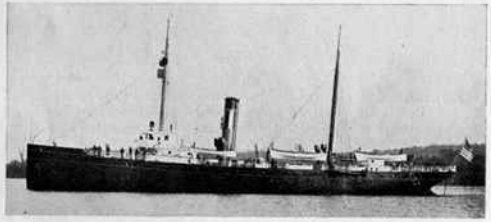
(*For appearance, v. photo under "Auxiliaries—Mine Sweepers," in U.S. Navy Section.*)

REDWING (1919.) Ex-Navy Minesweeper, taken over 1924. Steel, 1 screw. 1215 tons. Dimensions: 187½ × 35½ × 12½ feet (*mean* draught). Speed: 12·8 kts. Guns: **2**—3 inch, 23 cal., **2**—1 pdr. (**GVKM.**) (*Astoria, Oregon*).

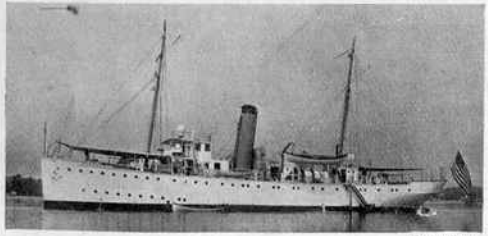
Cruising Cutters—*continued.*



SEMINOLE (1900). Steel, 1 screw. 900 tons. Dimensions: 188 × 29½ × 12 feet. Speed: 14 kts. Guns: 2—3 inch, 2—1 pdr. (*Sault St. Marie, Mich.* **GVFP.**)

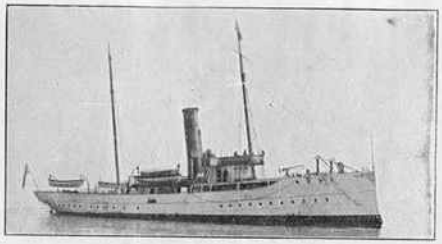


SENECA (1908). Steel, 1 screw. 1530 tons. Dimensions: 204 × 34 × 17¼ feet. Speed: 11·2 kts. Guns: 2—4 inch, 50 cal., 2—1 pdr. (*San Juan, Puerto Rico,* **GVHL.**)

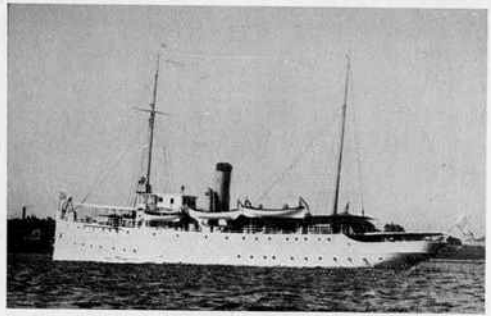


1920 *Photo.*

TALLAPOOSA (1915). Steel, 1 screw. 964 tons. Dimensions: 165¾ × 32 × 11 feet. Speed: 11·8 kts. Oil fuel only. Guns: 2—3 inch, 50 cal., 2—6 pdr. (*Juneau Alaska* **GVDP.**)

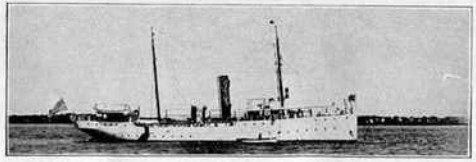


TUSCARORA (1902). Steel, 1 screw. 849 tons. Speed: 11·4 kts. Dimensions: 178 × 30 × 10 feet. Guns: 2—6 pdr. (*St. Petersburg, Fla,* **GVFS.**)



1919 *Photo, U.S. Navy Publicity Bureau.*

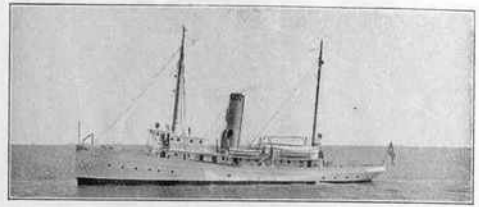
UNALGA (1912). Steel, 1 screw. 1181 tons. Dimensions: 190 × 32½ × 14 feet. Speed: 12 kts. Guns: 2—6 pdr. (*Fort Lauderdale, Fla.* **GVHS.**)



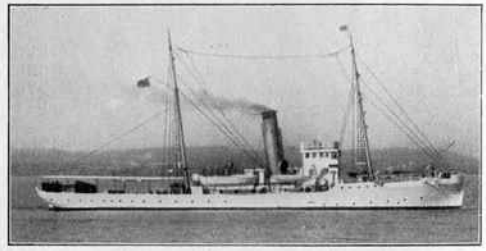
Note to Photo.—Additional searchlights are now carried and boats removed from poop.

YAMACRAW (1909). Steel, 1 screw. 1210 tons. Dimensions: 191⅝ × 32½ × 13 feet. Speed: 14 kts. Guns: 2—3 inch, 50 cal., 2—6 pdr. (*Savannah, Ga.,* **GVHR.**)

Cruising Cutters.



ACUSHNET (1908). Steel, 1 screw. 859 tons. Dimensions: 152 × 29 × 13⅜ feet. Speed: 12·5 kts. Guns: 2—1 pdr. (*Woods Hole, Mass.* **GVHP.**)



1929 *Photo.*

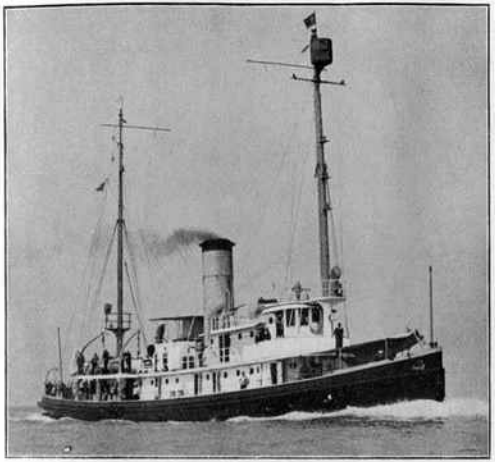
APACHE (1891). Iron, 1 screw. 764 tons. Dimensions: 185½ × 29 × 9¼ feet. Speed: 11·5 kts. Guns: 3—6 pdr. (*Baltimore, Md.* **GVBS.**)

Photo. See following columns.

Name.	*Station.*	*Signal Letters.*
CAHOKIA	*Eureka, Calif.*	**GVDK.**
KICKAPOO	*Rockland, Maine.*	**GVFQ.**
MASCOUTIN	*Norfolk Va.*	**GVFB.**
SAUKEE	*Key West*	**GVFR.**
TAMAROA	*San Diego, Calif.*	**GVCF.**

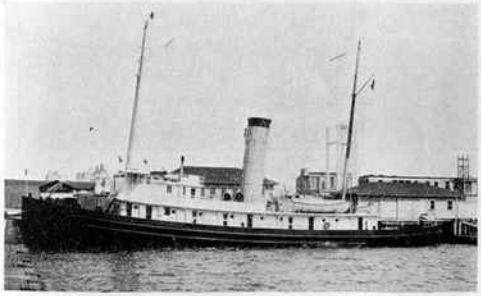
Built 1919-1920 as seagoing tugs; transferred from U.S. Shipping Board 1921. Steel, 1 screw. 770-859 tons. Dimensions: 151½ × 27½ × 15 feet. Speed: 11 kts. Guns: 2—1 pdr. *Kickapoo* fitted as Ice Breaker. *Cahokia* and *Tamaroa* are oil-fired; others coal.

Cruising Cutters—*continued.*



CARRABASSET. *Photo added* 1927.

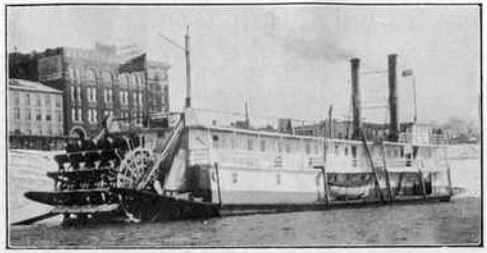
CARRABASSET (1919). Ex-Fleet Tug taken over from Navy Dept., 1924. Steel, 1 screw. 1133 tons. Dimensions: 155¾ × 30 × 17½ feet. Speed: 11·9 kts. Guns: **2**—1 pdr. (*Norfolk, Va.* **GVKL.**)



TAMAROA. 1931 *Photo.*

(*See previous column.*)

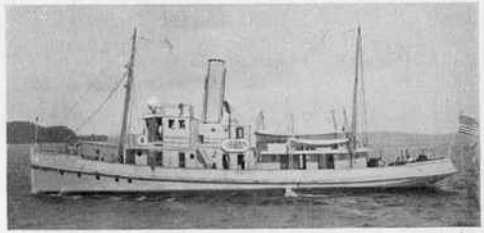
Cruising Cutters—*continued.*



KANKAKEE. (rated as "Special Craft"). 1929 *Photo*

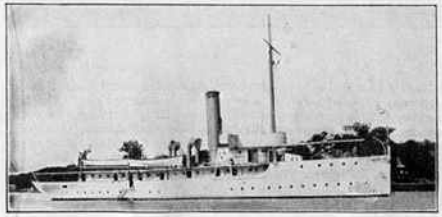
KANKAKEE ... ... *Evansville, Ind.* **GVKS**

Built 1919. Steel hull, wood deckhouses. 383 tons. Dimensions: 182 × 34 × 3½ feet. Guns: none. Speed: 12 kts. River Steamer for flood relief.

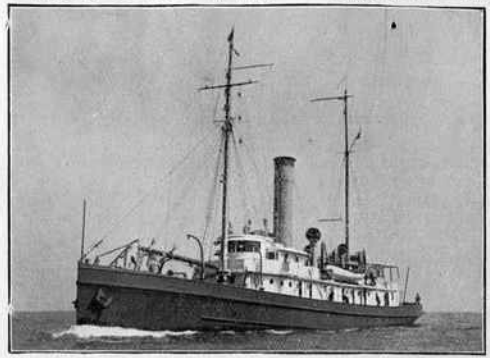


1931 *Photo.*

MANHATTAN (1918). Steel, 1 screw. Ice Breaker, Salvage Vessel, Tug and Fire Float. 406 tons. Dimensions: 120½ × 24 × 11¾ feet. Speed: 9·5 kts. Guns: **2**—1 pdr. (*New York, N.Y.* **GVCL.**)

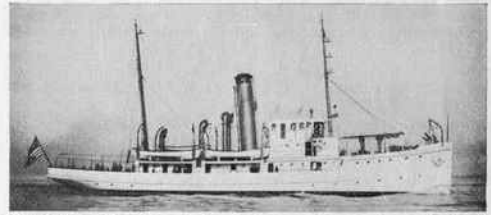


PAMLICO (1907). Steel, twin screw. 451 tons. Dimensions: 158 × 30 × 5⅜ feet Speed: 9·3 kts. Guns: **2**—6 pdr. (*Newbern, N.C.* **GVHJ.**)

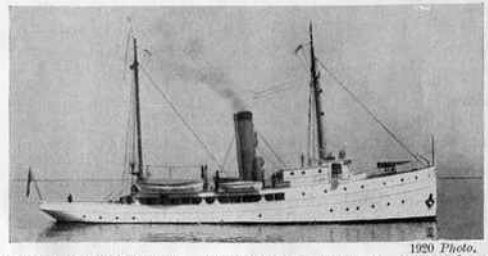


PEQUOT. (rated as "Special Craft"). *Photo added* 1927.

PEQUOT (ex-Minelayer *General Samuel M. Mills*, built 1909, transferred from War Department 1922). Steel, 1 screw. 950 tons. Dimensions: 166½ × 32½ × 11¼ feet. 12 kts. (*Curtis Bay, Md.* **GVCM.**)



SHAWNEE (1922). Steel. 900 tons. Dimensions: 158¼ × 30 × 14 feet. Guns: **2**—1 pdr. Built by Union Con. Co., Oakland, Cal. (*S. Francisco, Calif.* **GVCB.**)



1920 *Photo.*

SNOHOMISH (1908). Steel, 1 screw. 986 tons. Dimensions: 152 × 29 × 15½ feet. Speed: 12 kts. Guns: **1**—3 inch, 50 cal. (*Port Angeles, Wash.*, **GVHN.**)

Harbour Craft (34).

Detailed to larger Maritime Ports to enforce Customs and Navigation Laws and the regulation of the anchorage and movements of vessels.

Arcata (1903). Wood. 1 screw. 138 tons. Dimensions: 85 × 17½ × 10½ feet. Speed: 11 kts. Guns: 1—1 pdr. (*Seattle, Wash.* **GVHC.**)

Calumet (1894). Iron. 1 screw. 170 tons. Dimensions: 94½ × 20½ × 9 feet. Guns: None. Speed: 11 kts. (*New York, N.Y.*, **GVDR.**)

Clayton (1916). Wood. Dimensions: 76·8 × 24·8 × 10·5 feet. (*Curtis Bay, Md.*)

Name.	*Station.*	*Signal Letters.*
Chautauqua	*New London, Conn.*	**GVJM.**
Chicopee	*Portland, Maine*	**GVJL.**
Chippewa	*Sault Ste. Marie, Mich.*	**GVJK.**
Chulahoma	*New York*	**GVCS.**

All built 1919. Wood. 215 tons. Dimensions: 88 × 20 × 8¾ feet. Speed: 10 kts. Are Ex-Navy Tugs taken over by Coastguard. *Chincoteague* and *Choptank* of this class, sold 1925.

Davey (1908). Steel, 1 screw. 182 tons. Dimensions. 92½ × 19 × 10½ feet. Guns: *Nil.* Speed: 10·5 kts. (*New Orleans, La.*, **GVHM.**)

Golden Gate (1896). Steel, 1 screw. 240 tons. Dimensions: 110 × 20½ × 9⅝ feet. Speed: 11 kts. (**GVFH** *San Francisco*).

Guard (1914). Wood. 52 tons. Dimensions: 67 ft. 7 in. × 12½ × 6½ feet. Speed: 10 kts. (*Seattle Wash.*, **GVHW.**)

Guthrie (1895). Iron, 1 screw. 149 tons. Dimensions: 88 × 17½ × 9 feet. Speed: 11 kts. (*New York*, **GVBQ.**)

Hudson (1893). Iron, 1 screw. 179 tons. Dimensions: 96½ × 20 × 9 feet. Speed: 12 kts. (*New York, N.Y.*, **GVDQ.**)

Leopard **GVFL** (1920), ***Lightning*** (1920). Wood, Dimensions: 94 × 24 × 12 feet. (*Curtis Bay, Md.*) **GVKF.** 397 tons. 12 kts.

Mackinac (1903). Steel, 1 screw. 241 tons. Dimensions: 110 × 20½ × 10½ feet. Guns: None. Speed: 12 kts. (*Boston, Mass.*, **GVHB.**)

Raritan (1905). Steel. 1 screw. 241 tons. Dimensions: 103 × 22 ft. 8 in. (*New York, N.Y.*) **GVFT.** 12 kts.

Winnisimmet (1903). Steel, 1 screw. 182 tons. Dimensions: 96½ × 20½ × 9 feet. Speed: 12 kts. (*Baltimore*, **GVFW.**)

Wissahickon (1904). Steel, 1 screw. 194 tons. Dimensions: 96½ × 20½ × 9½ feet. Speed: 11 kts. (*New York, N.Y.*, **GVHD.**)

Harbour Craft.

Numbered between AB.1. and AB.24.
Displ.: 12—194 tons.
Length from 65ft. to 41ft.
AB.5, 19, 20. Guns: 1—1 pdr.

Patrol Boats (Miscellaneous).

(Ex-Submarine Chasers.)

Name	(late *SC*).	*Station.*	*Signal Letters.*
Cook	(438)	*New London Conn.*	**GVKC.**
Cygan	(335)	*Oakland Cal.*	**GVKR.**
Smith	(155)	*Oakland Cal.*	**GVKQ.**
Tingard	(183)	*Oakland Cal.*	**GVJT.**

Built 1917-18, taken over 1919-20. Wood. 75 tons. Dimensions: 110 × 14½ × 6 feet. Speed: 11 kts. Guns: 1—1 pdr. (Twin screw, petrol.)

1931 *Photo.*

32—125 ft. steel Patrol Boats: ***Active, Agassiz, Alert, Antietam, Bonham, Boutwell, Cahoone, Cartigan, Coltax, Crawford, Cuyahoga, Diligence, Dix, Ewing, Faunce, Frederick Lee, General Greene, Harriet Lane, Jackson, Kimball, Legare, Marion, McLane, Morris, Nemaha, Pulaski, Reliance, Rush, Tiger, Travis, Vigilant, Woodbury, Yeaton.*** 220 tons. Dimensions: 125 × 23½ × 6½ feet. Guns: 1—3 inch, 23 cal.

Swift (1917). 95 tons Wood Dimensions: 66 × 13½ × 3½ feet. Speed: 15 kts. (Twin screw, petrol.) (*San Francisco, Cal.*, **GVHT.**)

Patrol (1917). Wood, 23 tons. Dimensions: 68¾ × 14 × 3¾ feet. Speed: 9 kts. Guns: 1—1 pdr. (New York).

PETREL. 1929 *Photo.*

13 steel Patrol Boats: ***Corwin, Dallas, Dexter, Eagle, Forward, Gallatin, Mahoning. Nansemond, Naugatuck, Patriot, Perry, Petrel, Wolcott.*** 210 tons displacement. 99′ 8″ × 23′ × 8′. Diesel engines. 10 kts. Guns: 1—3 inch, 23 cal.

CG 182. *Photo added* 1927.

68 wooden Patrol Boats: ***CG–100*** to ***CG–288.*** (1924-25). 37 tons displacement. Dimensions: 74′ 11″ × 13′ 7½″ × 4′ Gasoline engine. 13·5 kts. Guns: 1—1 pdr.

Patrol Boats.

1932 *Photo.*

ARGO. 1933 *Photo.*

9—165 ft. steel Patrol Boats.

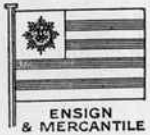
Argo	GVFJ
Aurora	GVCK
Calypso	GVCR
Daphne	GVCT
Galatea	GVFK
Hermes	GVCW
Icarus	GVDT
Perseus	GVDJ
Thetis	GVCH

Built in 1931, 1932 and 1933. 337 tons. Dimensions: 165 × 25½ × 8½ feet. H.P. 1,300. Speed 16·5 kts. Twin screws; Diesel engines. Guns: 1—3"/23 cal., 2—1 pdr.

Patrol Boats.—*continued.*

1932 *Photo.*

6—78 ft. Patrol Boats. ***C.G. 400–405***. (Newport News. 1931). Wood. Displ. 43 tons. Guns. 1–1pdr. H.P. 1070 = 21·7 kts. (New London, Conn.)

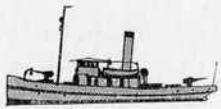


URUGUAY.

Revised 1932 by Courtesy of the Minister of War.

RECOGNITION SILHOUETTES.

VANGUARDIA.



CORSARIO.

18 DE JULIO.

URUGUAY.

Capitan Miranda.

Minister of War and Marine: Senor Alberto Mañé.

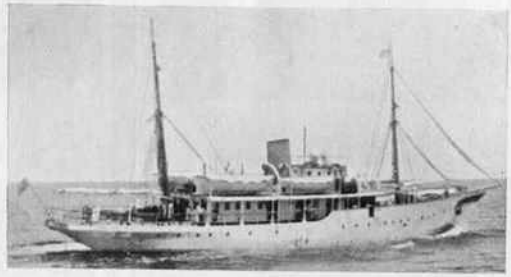
Director of Navy: Captain Arturo Juambeltz. *Personnel:* 930.

Mercantile Marine: (From "Lloyd's Register," figures.) Total *gross* tonnage, 50,601.

Ports, Yards, &c.

MONTEVIDEO.—There is a fort here, but only for returning salutes. The National Dock (Dique Nacional) is operated by the Naval Authorities. Length, 459 feet. Breadth, 55 feet. Maximum depth, 17 feet. Steam and electric pumps can empty dock in eight hours. Dique Mauá (south of city) is property of Monte Video Gas Co. Dimensions: 272×50×12 feet 4 inches to 15 feet 2 inches. Has 2 steam pumps and 25 ton crane, also fixed and moving cranes. The firm Varadero del Cerro have a yard, well equipped for repairs, with a small slipway. The National Port Administration bought the Varadero Lussich, a repairing yard with a small slipway during 1919.

Survey Ship.



1932 *Photo, Official.*

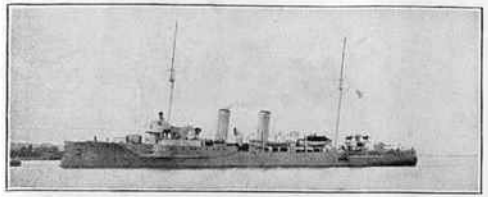
CAPITAN MIRANDA (Matagorda, Cadiz, 1930 516 tons.

Dimensions: 148 (*p.p.*)×28×10.

1 Diesel (M.A.N.). 500 H.P. = 10·5 kts

Oil: 45 tons.

Torpedo Gunboat & Training Ship.



URUGUAY (Vulkan, Stettin, 1910). 1150 tons. Complement, 125. Dimensions: 278¾ (*p.p.*) × 30⅝ × 12 feet (*max.* draught). Guns (Skoda): **2**—4·7 inch, 45 cal., **4**—12 pdr., **6**—1 pdr. (Vickers). **4** M.G. Torpedo tubes: **2**—18 inch *above water*. Armour: ¾″ nickel steel over boilers and engines. 4 Normand boilers. H.P. 8,000 = 23 kts. Coal: 210 tons = 3,000 miles at 10 kts.

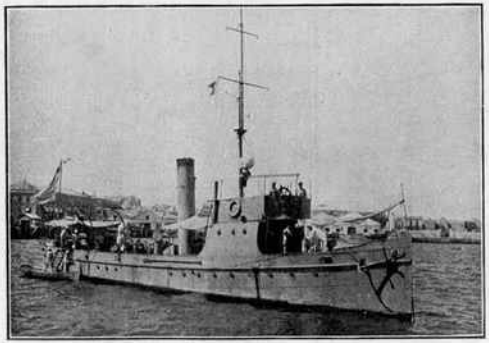
Note.—Is fitted for service as Training Ship for midshipmen.

Training Ship.

1932 *Photo, Official.*

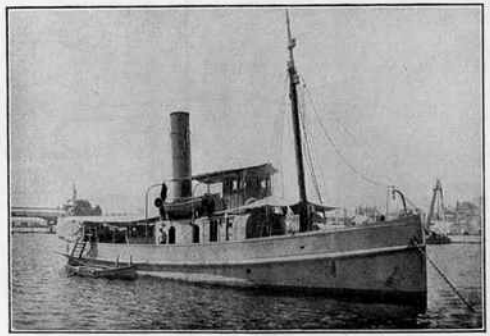
18 DE JULIO. 764 tons. Complement, 85.
Dimensions: 194 (*p.p.*) × 26 × 15·5 feet.
600 H.P. = 12 kts. No guns at present. Coal: 140 tons.

Tenders.



1918 *Photo, A. J. Carbone.*

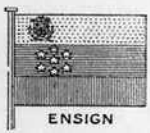
VANGUARDIA (Glasgow, 1908). 95 tons.
H.P. 200 = 12 kts. Guns: **2**—37 mm.

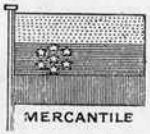


1918 *Photo, A. J. Carbone.*

CORSARIO. 130 tons. 10 kts.
Guns: **2**—37 mm.
(Employed on Survey Service, Ris de la Plata).

VENEZUELA.


ENSIGN


MERCANTILE

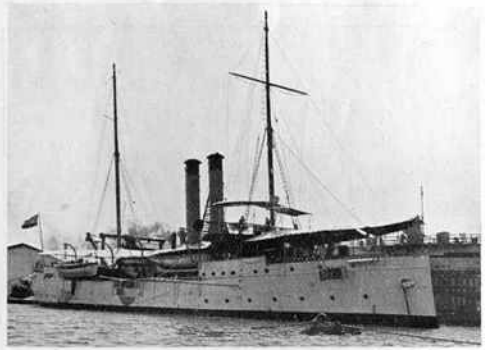
Personnel :

Minister of War and Marine : General E. López Contreras.

Warship Port : Puerto Cabello. Steel floating dock here 282 × 90 × 22 feet. (2400 tons capacity) built in five sections on self-docking system, and worked by electricity. Also a wooden floating dock, 180 × 60 × 19 feet (1200 tons capacity). Both these docks are Government property.

Mercantile Marine: ("Lloyd's Register," 1933 figures). 37 vessels of 59,558 gross tonnage.

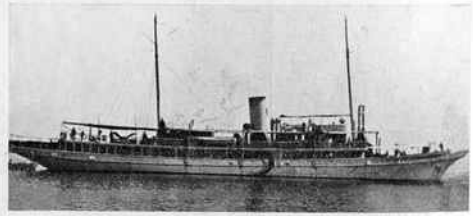
Gunboats.



1933 *Photo, Official.*

MARISCAL SUCRE (ex-Spanish *Isla de Cuba*, 1886, captured by U.S., 1898, and sold to Venezuela, 1912). 1125 tons. Dimensions: 192 × 30 × 12¼ feet (*Mean* draught) 13 feet (*Max.* draught). Guns: 2—4 inch, 2—6 pdr., 4—3 pdr., 2—1* pdr. H.P. 2000 = 11 kts., *max.* continuous speed, 8 kts. Coal: 200 tons. Endurance: 885 miles at 9·5 kts. Complement, 100.

* 1—1 pdr. transferable to boat mounting.



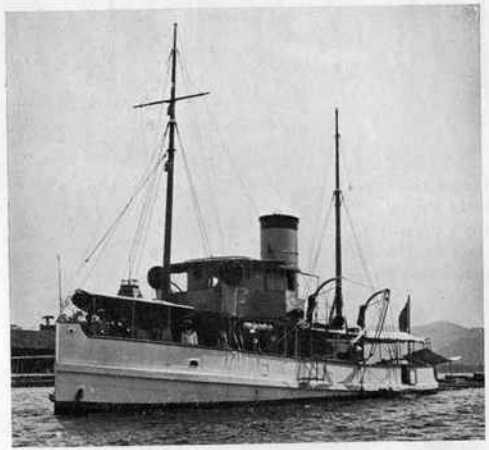
1933 *Photo, Official.*

MARACAY. Purchased 1923. 800 tons. 216 × 26 × 16 feet. No guns at present. I.H.P. 1600 = 12 kts. Radius: 800 miles.

Gunboats—*continued.*

1933 *Photo, Official.*

GENERAL SALOM (ex-*Restaurador*, purchased 1900; built as U.S. private yacht *Atlanta*, 1884). 750 tons. Dimensions: 240 × 26 × 13 feet (*max.* draught). Guns: 1—12 pdr., 4—6 pdr., 1 machine. H.P. 1500 = 12 kts., *max.* continuous speed 8 kts. Coal: 200 tons. Endurance: 1080 miles at 8 kts. Complement, 86.



1933 *Photo, Official.*

ARAGUA (ex-tug *Caroni*), purchased 1929. 154 tons. 1 M.G. I.H.P. 525 = 7 kts. 14 tons oil. Complement: 30.

Gunboats—*continued.*

1933 *Photo, Official.*

MIRANDA (Clydebank, 1895; purchased from Spain, 1898). 200 tons. Dimensions: 140 × 17½ × 7½ feet. Guns: 2—6 pdr. 2—57 m/m. H.P. 315 = 10 kts. Coal: 36 tons. Endurance: 850 miles at 8 kts. Complement: 55.

Armed Tug.

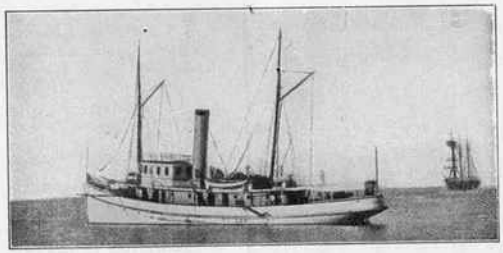


Photo by favour of Ellis Greu & Co., N.Y.

JOSÉ FELIX RIBAS (ex-*Zumbador*, built 1894). 300 tons. Dimensions: 127 × 23 × 12 feet. Guns: 2—6 pdr. Speed, 8 kts. Coal: 60 tons. Endurance: 850 miles. Complement, 55.

Transports.

1933 *Photo, Official.*

NARICUAL. 270 tons. Used as a coal transport.

1933 *Photo, Official.*

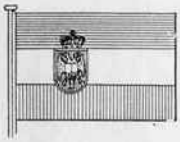
ZAMORA. 800 tons. 200 × 27 × 12 ft. No guns. 10 kts. Radius: 2000 miles.

YUGO SLAVIA.

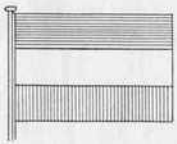
Revised 1933 by courtesy of the Ministry of Marine.

FLAGS.

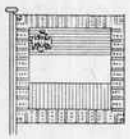
ROYAL STANDARD



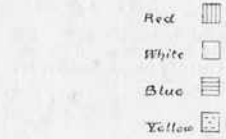
ENSIGN



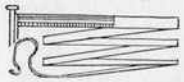
MERCANTILE



MINISTER OF WAR AND MARINE



ADMIRAL (WITH WHITE CENTRE) | VICE-ADMIRAL (WITH RED CENTRE) | REAR-ADMIRAL (WITH BLUE CENTRE)



PENNANT

ADMINISTRATION.

Minister of War and Marine: General Dragomir Stojanovitch.

Commander in Charge of Fleet: Vice Admiral Nikola Stanković.

Naval Attaché in London:

Personnel: 487 officers. 5,500 petty officers and men.

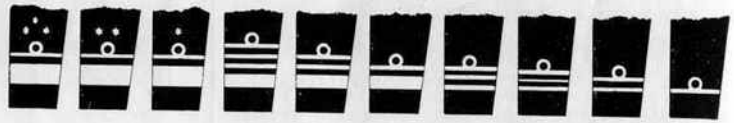
(Reserve): 164 officers. 570 petty officers and men.

Colour of Ships: Light grey.

Mercantile Marine: From "Lloyd's Register," 1933. 180 vessels of 374,467 gross tonnage.

Displacements are "standard."

UNIFORMS.



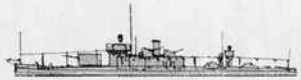
Admiral.	
Vice-Admiral.	
Kontradmiral. (Rear Ad.)	
Kapetan bojnog broda	Captain over 3 years.
Kapetan Fregate.	Captain under 3 years.
Kapetan Korvete.	Commander.
Poručnik bojnog broda. 1 Klase.	Lt.-Commdr.
Poručnik bojnog broda 2 Klase.	Lt. over 4 years.
Poručnik Fregate.	Lt. under 4 years.
Poručnik Korvete.	Sub.-Lt.

For relative ranks:

Engineers have silver grey between the stripes.
Paymasters have red between the stripes.
Constructors have purple between the stripes.
Warrant Officers have brown between the stripes.
Surgeons have an Aesculapias snake on the curl.

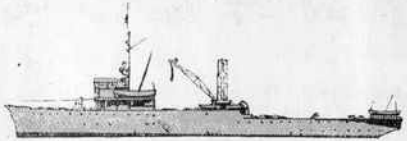
MORAVA.

SAVA.



DRAVA.

VARDAR.

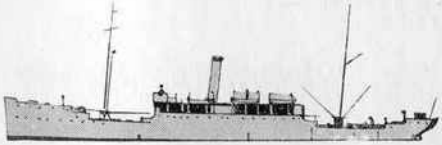


ZMAJ.

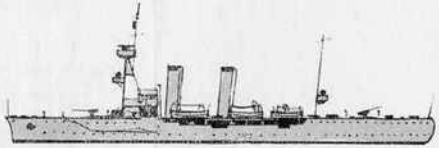
JAKI.

SILNI

GALEB *class* (6).



HVAR (s/m depot ship).



DALMACIJA.

VILA.

DUBROVNIK.

D.2.

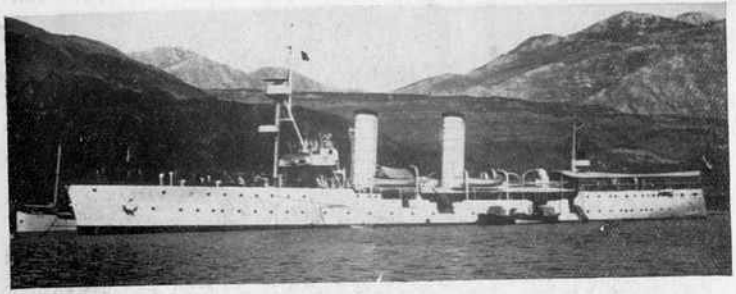
T.5-8.

T.B.1-4.

SMELI. OSVETNIK.

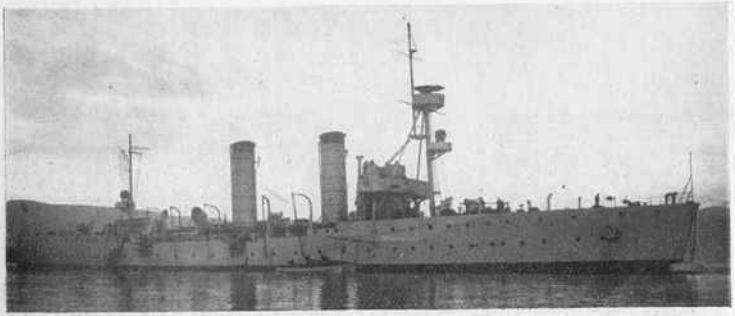
HRABRI. NEBOJSA.

Cruiser (*Used for training purposes.*)



DALMACIJA.

1931 *Photo, Official.*

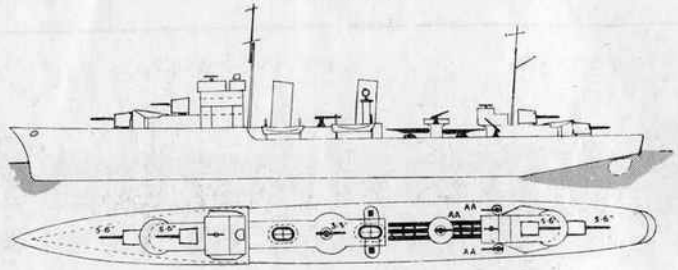


1931 *Photo, Official.*

DALMACIJA (ex-German *Niobe*, Weser Yard, 18th July, 1899). Displacement: 2370 tons. Dimensions: 342¼ × 38½ × 17½ feet (*max.* draught). Guns: **6**—3.3 inch, 55 cal. (83 *m/m*) AA. (These are guns of a new and powerful Skoda model, with a maximum range of 18,000 yds.) Torpedo tubes: originally carried **2**—19.7 inch, *above* water. Armour (Krupp): 2″ deck (amidships), ¾″ deck (ends), 3½″ glacis to engine room hatches, 3″ C.T. Machinery: 2 sets 4-cylinder triple expansion, 2 screws. Boilers: 5 Schulz-Thornycroft. Designed H.P. 8000 = 21 kts. Coal, *normal*, 380 tons; *maximum*, 580 tons.

Note.—Purchased from German Government in 1926 and underwent extensive refit and alterations at Kotor. Tripod mast fitted 1931.

Flotilla Leader.



DUBROVNIK.

DUBROVNIK (October 11, 1931, Yarrow).

Displacement: 1,880 tons (*standard*), 2,400 (*full load*). Dimensions: 371·5 × 35 × 11·7 feet.

Guns: **4**—5·6 inch (140 m/m),

(Skoda) **1**—3·3 inch AA.,

2—small AA.,

Tubes: **6**—21 inch.

Machinery: Parsons geared turbines. 3 Yarrow boilers.

D.H.P. 42,000 = 37 kts.

Fuel: Radius:

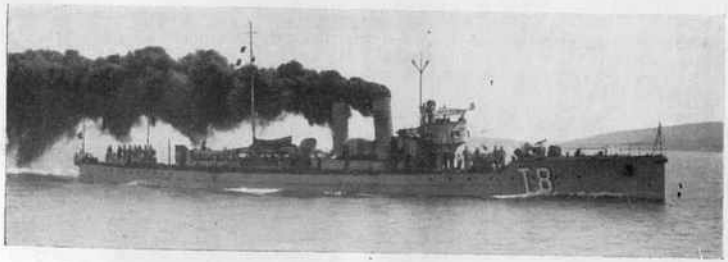
Note.—Designed to meet particular specifications and should be a fast and economical steamer. The re-appearance of the Skoda gun is noteworthy, the calibres being unusual. Note the position of the AA. guns by after shelter deck, after control position and removal of searchlight from the bridge to athwart second funnel. S.L. platforms are stayed away from funnel to avoid all vibration. She is the first Yarrow destroyer to have a clipper bow.

1932 *Photo, Messrs. Yarrow.*

8 Torpedo Boats (*Torpiljarke*) (ex-Austrian).

1931 *Photo, Official.*

4 Ex-Austrian boats: ***T1—T4*** (ex-*76 T—79 T*, Stab. Tecnico, Trieste 1913-15). Displacement: 262 tons. Fuel: 18 tons coal, 24 tons oil.

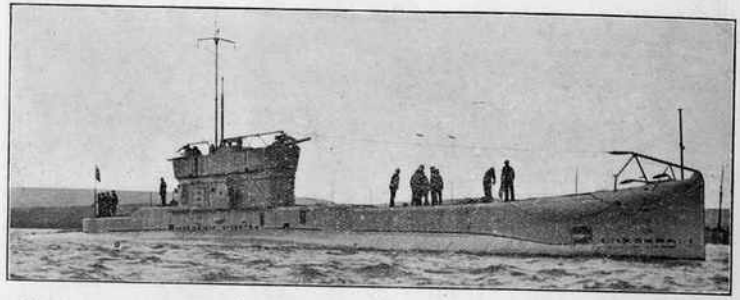


1931 *Photo, Official.*

4 Ex-Austrian boats: ***T5—T8*** (ex-*87 F, 93 F, 96 F, 97 F*, Ganz-Danubius Co., Porte Ré, Fiume 1913-15). Displacement 266 tons. Fuel: 20 tons coal, 34 tons oil.

Details of ***T1—T8.*** Dimensions: 188·3 × 18·7 × 4·9 feet. Guns: **2**—66 m/m. and **1** M.G. Torpedo tubes: **2**—18". Designed H.P. (turbines) 5000=28 kts. (24 reported best speed now). Yarrow boilers.

4 Submarines.

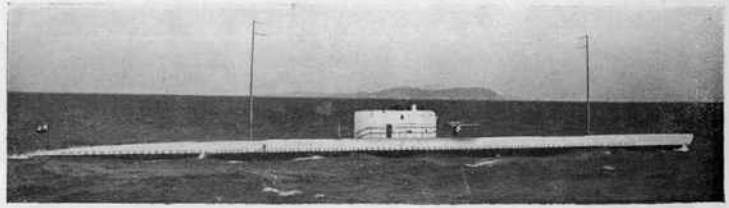


HRABRI. 1928 *Photo, Abrahams.*

Hrabri, Nebojša (Armstrong, 1927). Displacement: $\frac{?}{1,160}$ tons. Speed: $\frac{14.5}{9.5}$ k ts. Armament: **2**—4 inch AA. **6**—21 inch torpedo tubes. Generally similar to British L 50 type. Radius 5000 miles at 9 kts.
Names mean *Gallant* and *Dreadnought*.

HRABRI *class.*

(Carries a second gun on Conning Tower.)



OSVETNIK. 1930 *Photo, M. Bar.*

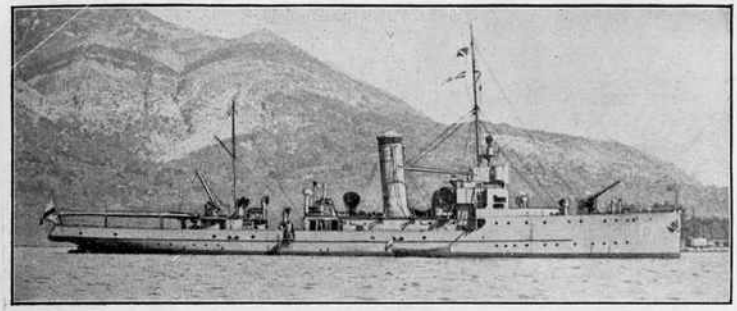
Smeli (Dec. 1st, 1928), ***Osvetnik*** (Feb. 14th, 1929). Laid down at Nantes, 1927, by At. & Ch. de la Loire. Displ. 600/809 tons. 227×18×14 feet. H.P. $\frac{4,4,4,0}{4,0,0,0}=\frac{14.5}{9}$ kts. Armament: **1**—4 inch Skoda, **1**—1 pdr. AA., **1** M.G.; 4 bow and 2 stern, 19.7 inch tubes. Complement, 43.
Names mean *Ardent* and *Vindictive*.

2 Coastal Motor Boats.

Uskok, Cetnik. Delivered by Messrs. John I. Thornycroft & Co., Ltd., in May, 1927. Dimensions: 55 × 11 feet. Machinery: 2 Thornycroft motors of 375 H.P. each=37 kts. *nominal* (40 kts. actually obtained). Auxiliary engine fitted for cruising, equal to 800 miles radius. 2 Lewis guns, 2—18 inch torpedoes. 4 D.C., and smoke floats.

MINE LAYER AND RIVER MONITORS.

Mine Layers (*Minonosci*).



SOKOL. 1924 *Photo, by courtesy of the Navy Department.*

6 boats: **GALEB, LABUD, JASTREB, KOBAC, ORAO, SOKOL** (1917-18). Displacement: 330 tons. Guns: 2—3·9 AA., 4—3 pdrs. Complement: 71. Names mean *Seagull, Swan, Hawk, Sparrowhawk, Eagle* and *Falcon.*

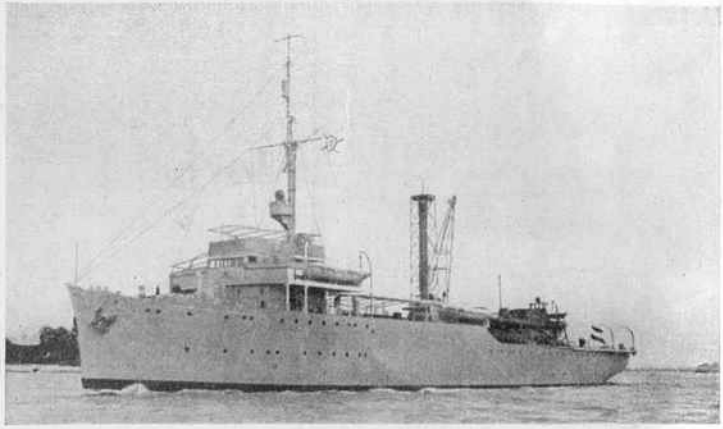
Mine Sweepers.

D2. 1931 *Official Photo.*

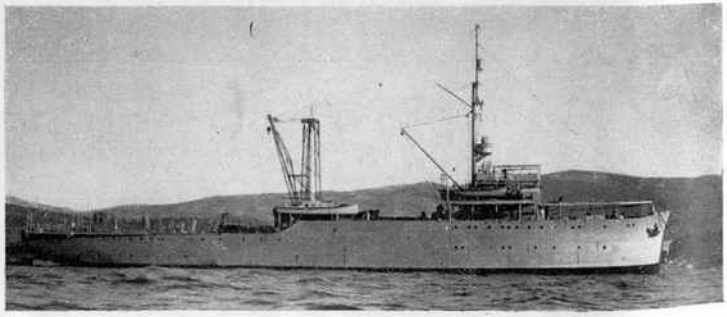
D2 (ex-Austrian t.b., *T.B.*36, 1886). Displacement: 78 tons. H.P. 900=17 kts. 128 feet long. Guns: 2—37 m/m. Triple expansion engines. Complement: 16.

5 boats: **MALINSKA, MARJAN, MELJINE, MLJET, MOSOR** (1931. Yarrows Adriatic Works, Kralyevica). Displacement: 130 tons. Similar to *Albona* type (Italy). H.P. 280=9 kts. Guns: 1—11 pdr.

Aviation Depot Ship.



ZMAJ. Built in 1928 by Deutsche Werft, Hamburg: burnt out and re-built in 1929-30. Displacement: 1870 tons. Dimensions: 251×44·8×11·8 feet. Guns: 1—4 inch AA. Machinery: 2 compressorless M.A.N. Diesels each 1630 H.P. (3260 H.P.)=15 kts. 2 screws. (*Zmaj*=*Kite*).



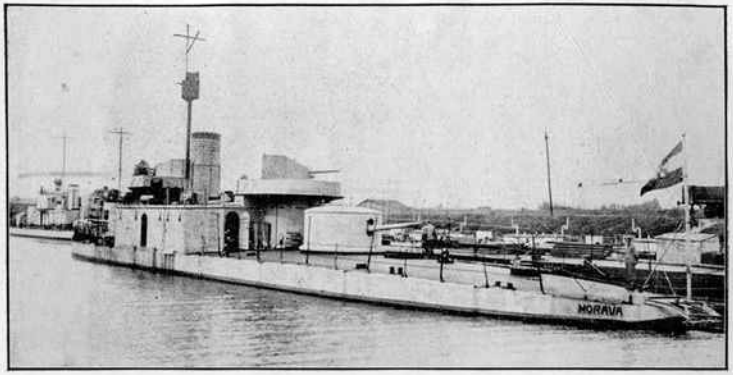
1931 *Official Photo.*

Danube Flotilla.—River Monitors.

DRAVA. 1933 *Photos, by courtesy of the Navy Dept.*

DRAVA (ex-Austrian *Enns*, 1913). 530 tons. Dimensions: 203½ × 34½ × 4½ feet. Guns: **2**—4·7 inch + **3**—4·7 inch howitzers, **2**—66 m/m., **7** M.G. Armour: 1½″ Belt and Bulkheads, 1″ Deck, 2″ C.T. and Turrets. Designed H.P. 1500 = 13 kts. Boilers: Yarrow. Fuel: Oil only, 70 tons. Complement, 86. Built under Austro-Hungarian 1912 Naval Programme; ceded to Yugo-Slavia 1920. Sister ship *Basarabia* now in Roumanian Navy.

River Monitors—*continued.*



MORAVA. 1924 *Photo, by courtesy of the Navy Dept.*

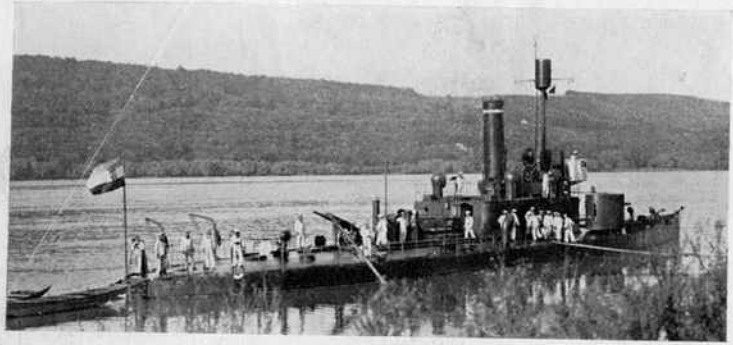
Note overhanging rails at stern, for launching and hauling in boats.

MORAVA (ex-Austrian *Körös*, Budapest, 1892). 390 tons. Dimensions: 177½ × 29½ × 4 feet. Designed H.P. 1200=10 kts. Boilers: Yarrow. Guns: **2**—4.7 inch (35 cal.), **2**—66 m/m. **2** M.G. Armour: 2″ Belt, ¾″ Deck, 3″ Turret, 2″ C.T. Complement, 79-80. Coal: 80 tons.

1933 *Photo, Official.*

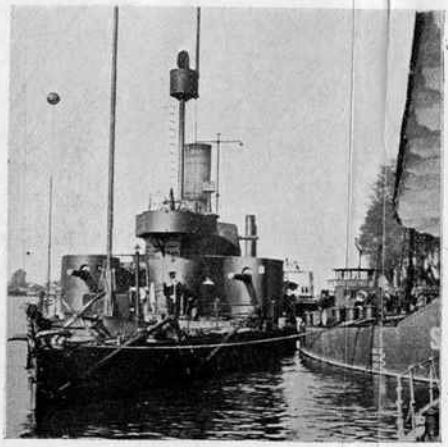
VARDAR (ex-Austrian *Bosna*, 1915). 530 tons. Dimensions: 190½ × 34½ × 4½ feet. Guns: **4**—4·7 inch, **2**—66 m/m. **7** M.G. Armour: 1½″ belt and bulkheads, 1″ deck, 2″ C.T., 2″ turrets and cupolas. H.P. 1600 = 12 kts. Oil: 75 tons. Complement, 100. Sister to *Bucovina*, now in Roumanian Navy.

River Monitors.



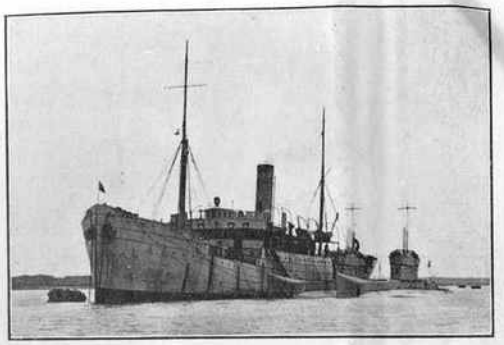
1933 *Photos, Official.*

SAVA (ex-Austrian *Bodrog*, Neupest, March, 1904). 380 tons.
Dimensions : 183¾ × 31½ × 4 feet. Designed H.P. 1,200 = 9 kts.
Boilers : Yarrow.
Armament : **2**—4·7″ (45 cal.), **2**—66 m/m., **2** M.G., **1** or **3** machine.
Armour : 1½″ Belt and Bulkheads, 1″ Deck, 3″—1½″ Turrets and Conning Tower.
Complement, 79. Coal : 62 tons.



SAVA

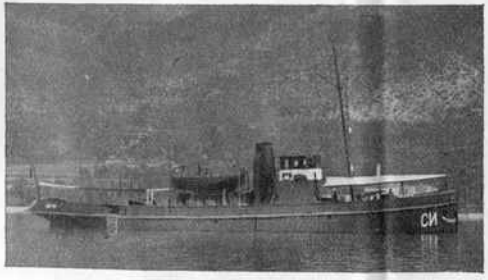
S/M Depot Ships.



HVAR. 1928 *Photo.*

HVAR (ex-*Vintalí*, ex-*Solun*) Sir Jas. Laing & Sons, Ltd., Sunderland, 1896 (Rebuilt 1927). 3,600 tons. Speed: 12 kts.
SITNICA (ex-*Najade*, 1891). 370 tons. Speed: 9 kts. Guns: 2—3 pdr. Name means *Dew*.

Tugs.



1931 *Official Photo.*

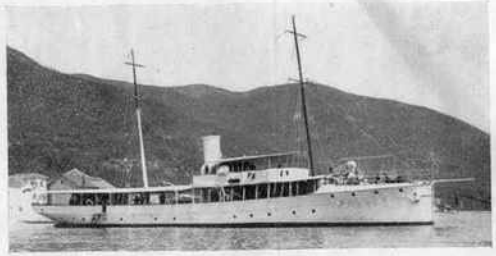
SILNI (1914). Displacement: 200 tons. H.P. 670=10 kts. Name means *Powerful*.

Tugs—*continued*.

1931 *Photo, Official.*

JAKI (1915). Displacement: 370 tons. H.P. 1,200=15 kts. Name means *Forceful*.
MOCNI (1889). 260 tons. H.P. 400=11 kts.
MARLJIVI (1898). 130 tons. H.P. 300=12 kts.
SNAZNI (1917). 100 tons. H.P. 300=10 kts.
USTRAJNI (1917). 160 tons. H.P. 250=9 kts.

Yacht.



1931 *Photo, Official.*

VILA (ex-*Dalmata*) (1896). 230 tons. H.P. 325=12 kts. Name means *Nymph*.

Training Ship.

JADRAN (1932). Displacement: 720 tons. Diesel engines. H.P. 375=8 kts.

1933 *Photo, Official.*

ADDENDA

Abbreviations

A.A. anti-aircraft gun.
Boilers. D.E. Double ended.
,, S.E. single ended.
Compl. Complement.
C.T Conning Tower.
Dims. Dimensions.
Displ. Displacement.
Dir. Con. Director controlled.
I.H.P. Indicated horse power.
K.C. Krupp cemented steel.
Length p.p. Between perpendiculars.
,, o.a. Over all.
,, w.l. Water line.
M.G. Machine guns.
S.H.P. Shaft horse power.
pdr. pounder.
S.L. Search light.

"Vessels" in Merchant Marine notes refers to steamers and motor ships only.

Mode of Address

A number of correspondents have asked that the correct mode of address for foreign warships should be included. A request for this was included in the official questionnaires. The equivalent to our "H.M.S." is only used in the Italian, Japanese and Netherlands and U.S.A. navies.

ITALY. R.I.N. "TRENTO" etc.

JAPAN. H.I.J.M.S. "KONGO" etc.

NETHERLANDS. Hl.Ms. "——".

PORTUGAL.

U.S.A. U.S.S. "——".

Other navies merely qualify the ship's name by her type thus:

FRANCE. Cuirassé "PARIS".
Croiseur "FOCH", etc.

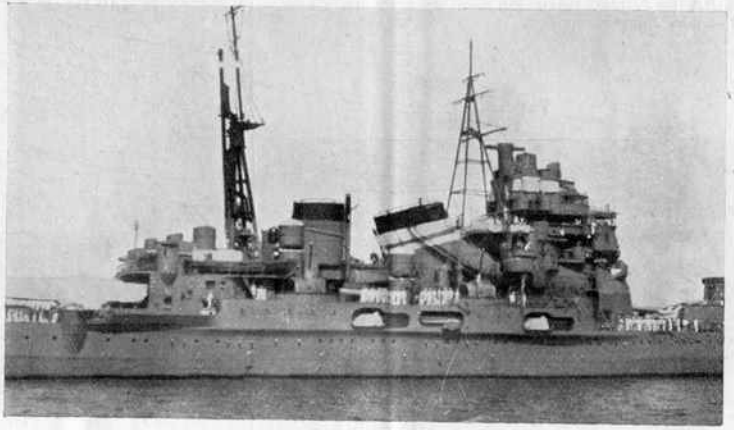
GERMANY. Linienschiff "HESSEN".
Kreuzer "BERLIN", etc.

The type equivalents will be found at the head of the columns in most of the navies.

LIMOL *class* (p. 86). Showing main mast. 1933 *Photo, R. Perkins, Esq.*

JAPAN.

ATAGO. 1933 *Official Photo.*



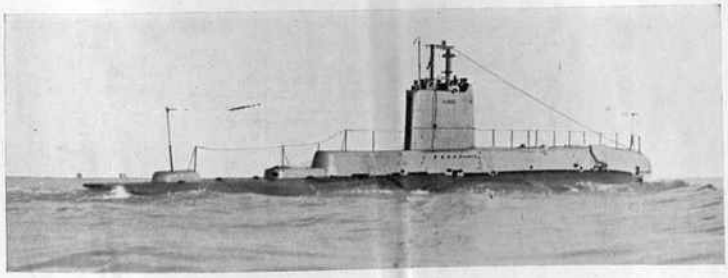
MAYA. 1933 *Photo.*

GREAT BRITAIN

The cruisers to be built under the 1933 Programme will be
2 of 9000 tons, carrying 6" guns.
1 ,, 5200 tons, "Arethusa" type.

BITTERN Convoy Sloop. 1933 Programme. Has been ordered from John Brown & Co.

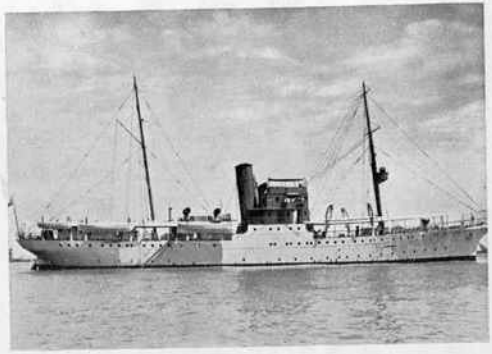
KINGFISHER Coastal Sloop. 1933 Programme. Has been ordered from Fairfields. Will be of a new type, probably for Fishery Protection duties.



1933 *Photo, Cribb.*

Starfish (p. 67).
Note raised c.t. and flush deck forward.

ROYAL INDIAN MARINE



1933 *Photo, Official.*

INVESTIGATOR. Ex-cable ship "Patrick Stewart" (Simons. 1924).
766 tons. 247·10 (*o.a.*) × 37·6 × 13·6 feet.
2 screws. Trip. exp. engines. Oil: 292 tons.
No guns. Complement 111.
For surveying duties. To replace former "Investigator" and "Palinurus," Scrapped.

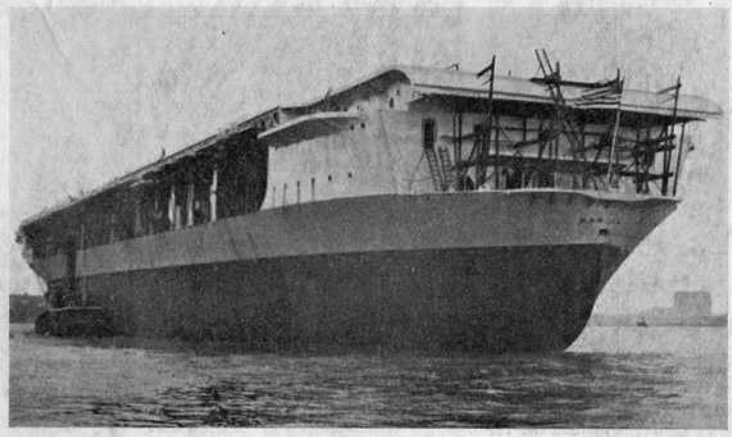
FRANCE

ALGERIE. (p. 178.)

1933 *Photo, Official.*

The river gunboat **"JOUFFROY d'ABBANS"** included in the 1932 Programme is still listed as "projected."

U.S.A.



RANGER. (p. 479.) 1933 *Photo, Official.*

BARR & STROUD

ANNIESLAND
GLASGOW, W.3

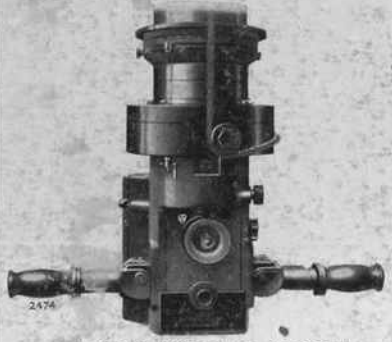
LIMITED

15 VICTORIA STREET
LONDON, S.W.1

SUBMARINE
PERISCOPES

Rangefinder Field of View

PRISMATIC
BINOCULARS



LOWER PORTION OF BIFOCAL
SKY SEARCHING PERISCOPE

GUNNERY CONTROL EQUIPMENTS

RANGEFINDERS

COINCIDENCE OR STEREOSCOPIC

Telegrams:
Telemeter, Glasgow
Retemelet, Sowest, London

TRADE MARK

Telephones:
Glasgow, Scotstoun 1831
London, Victoria 6668

Codes:—5th & 6th Edition ABC

TYPE CF30
ADOPTED BY THE ADMIRALTY
FOR GENERAL USE IN THE
BRITISH NAVY

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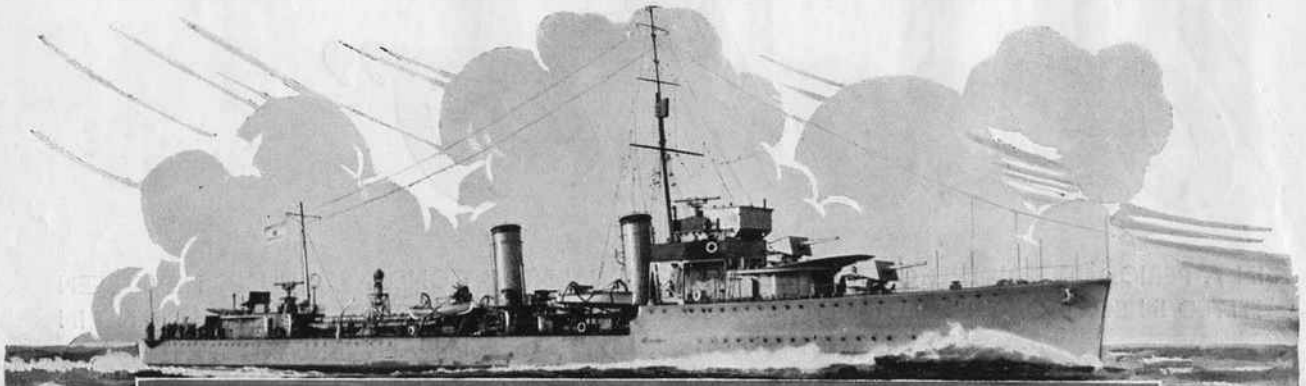

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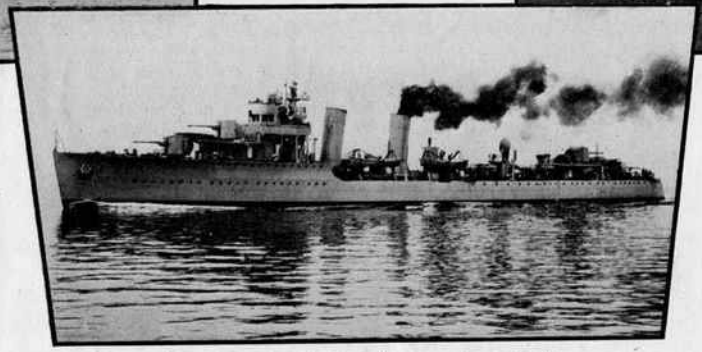

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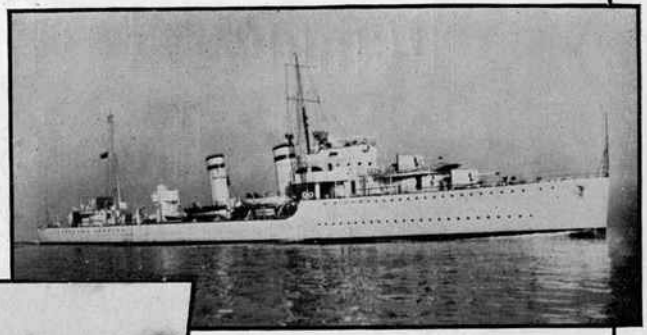

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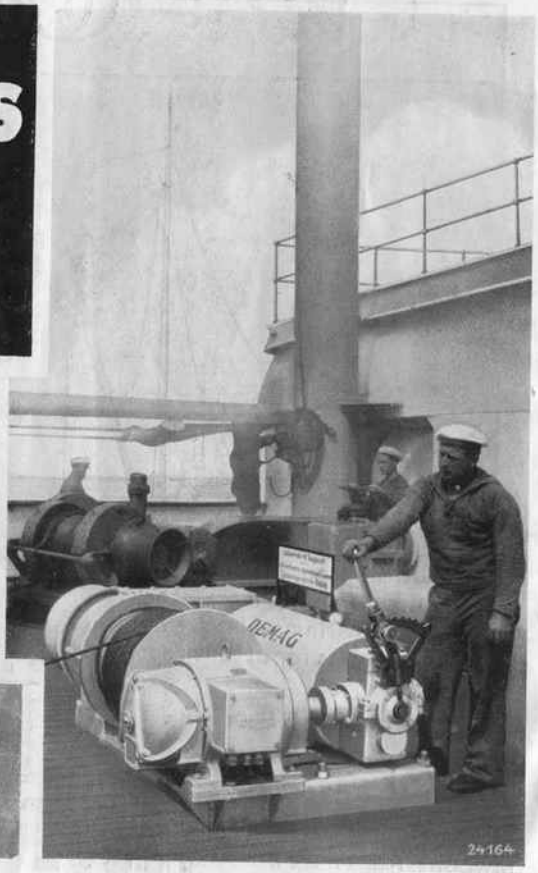

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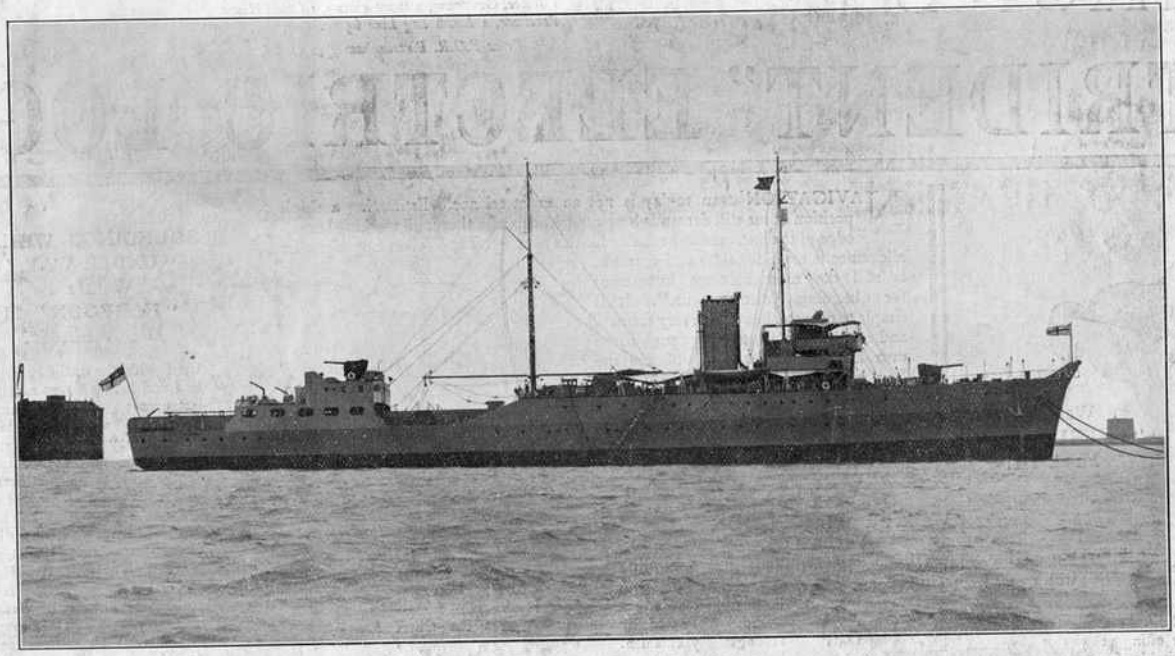

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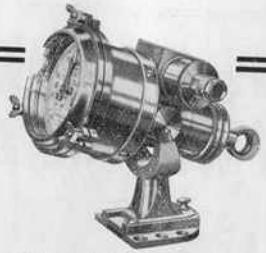

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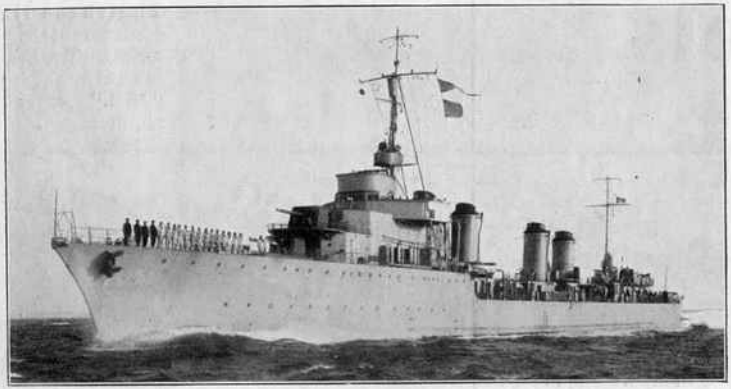

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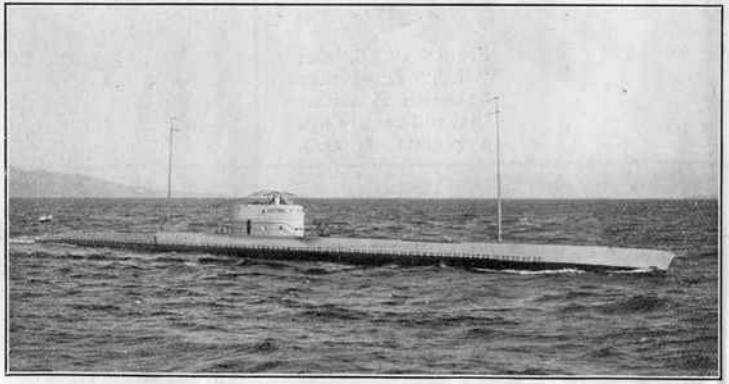

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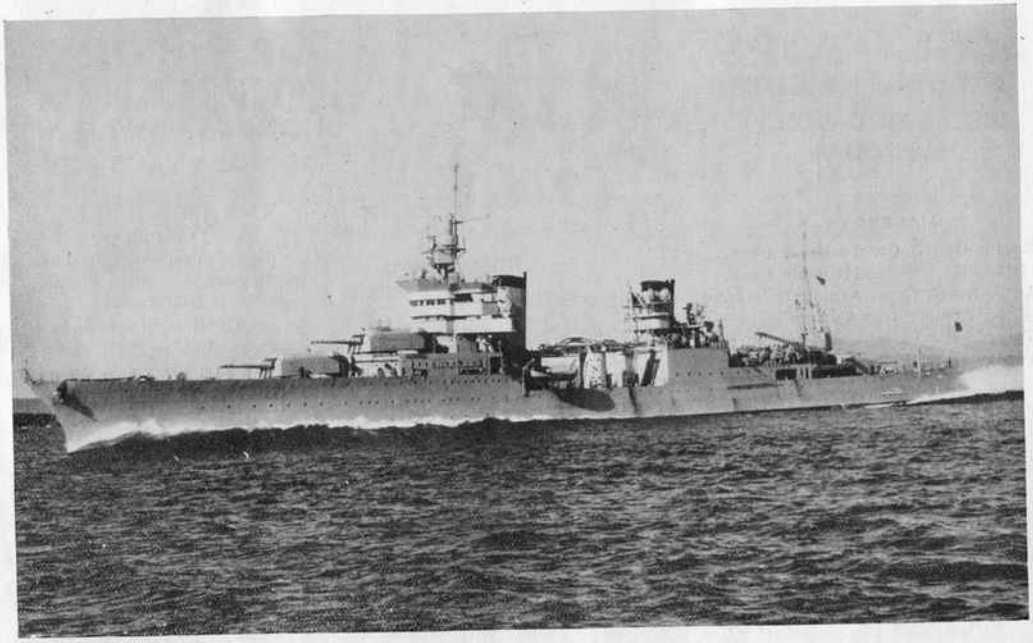

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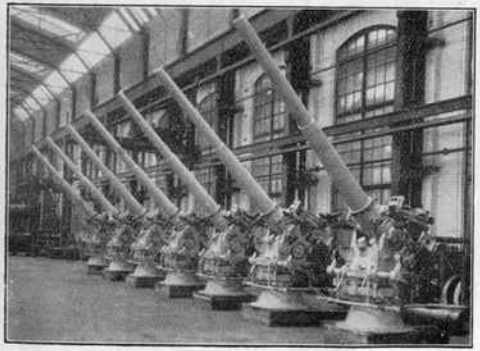

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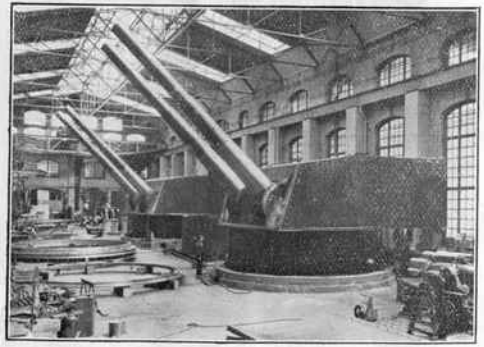

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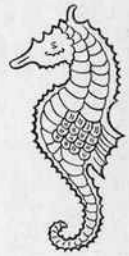

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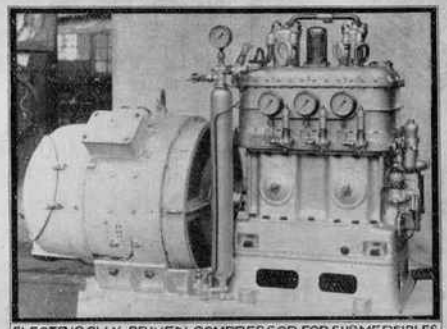

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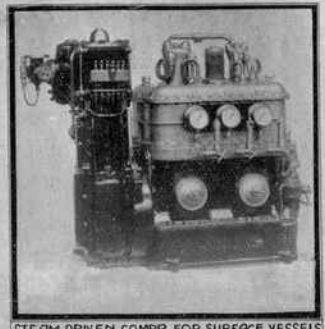

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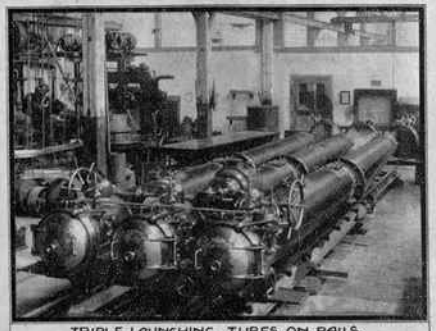

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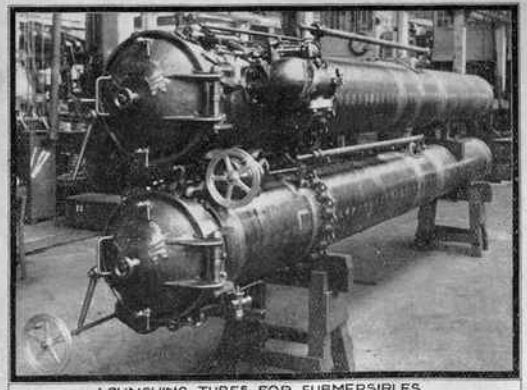

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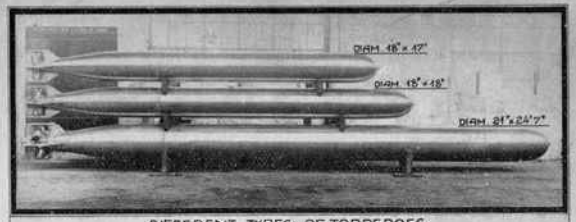

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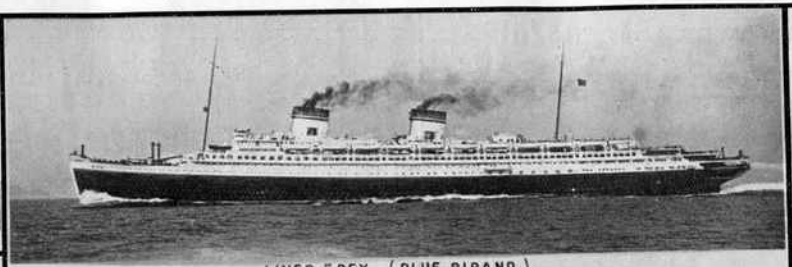

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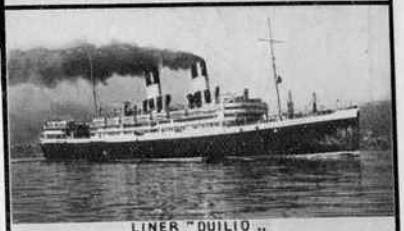

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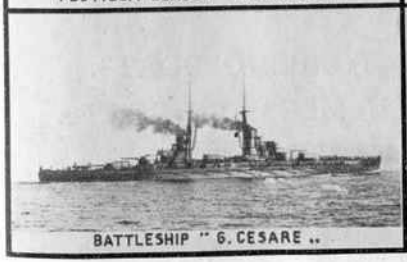

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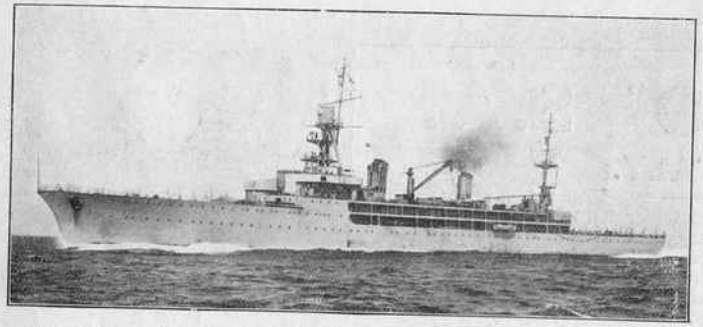

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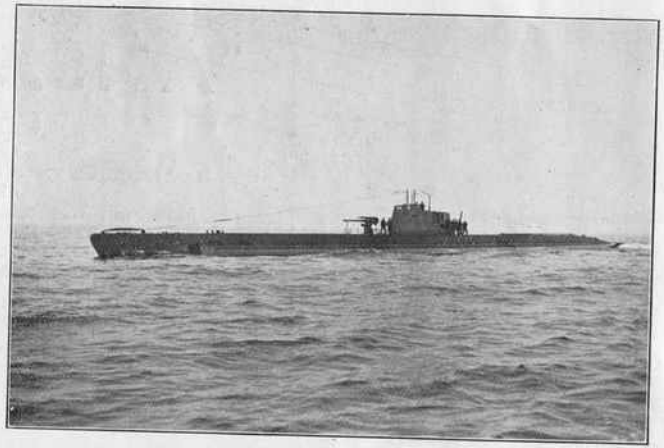

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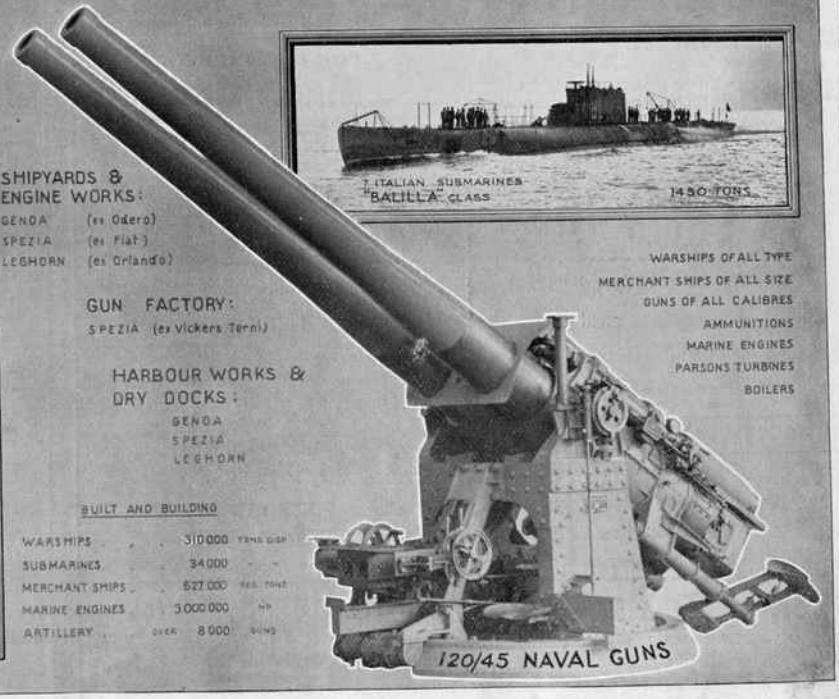

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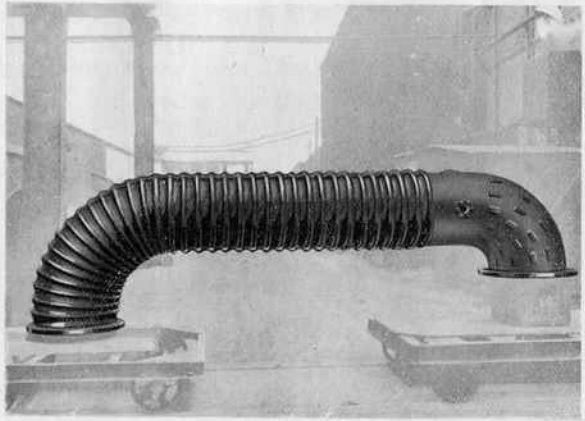

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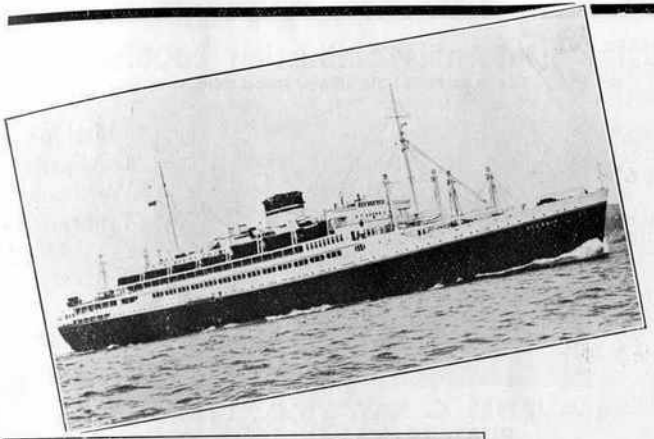

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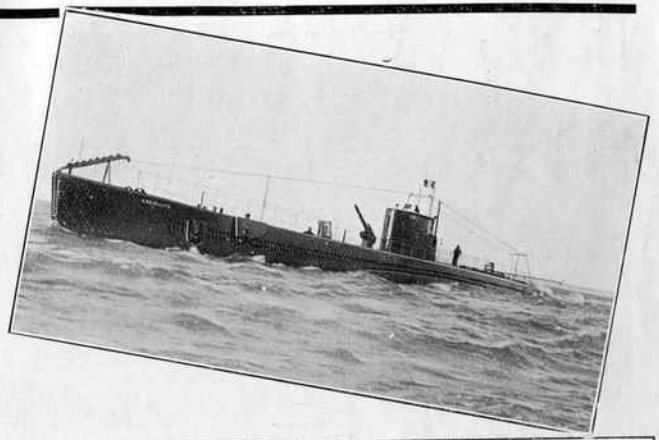

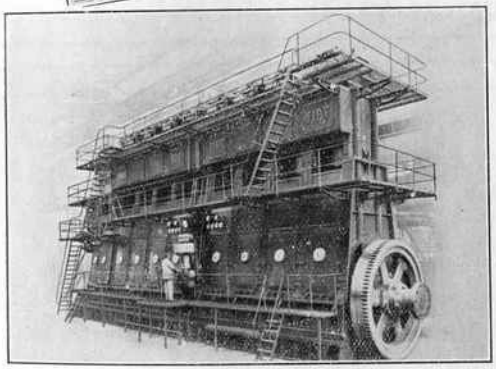

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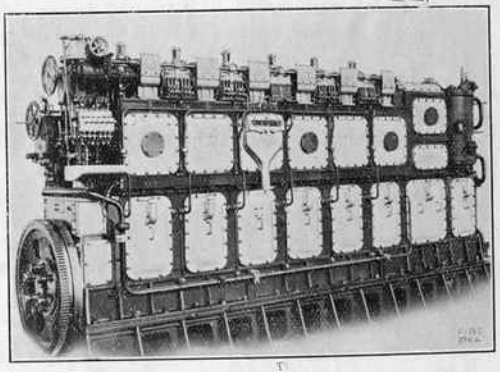

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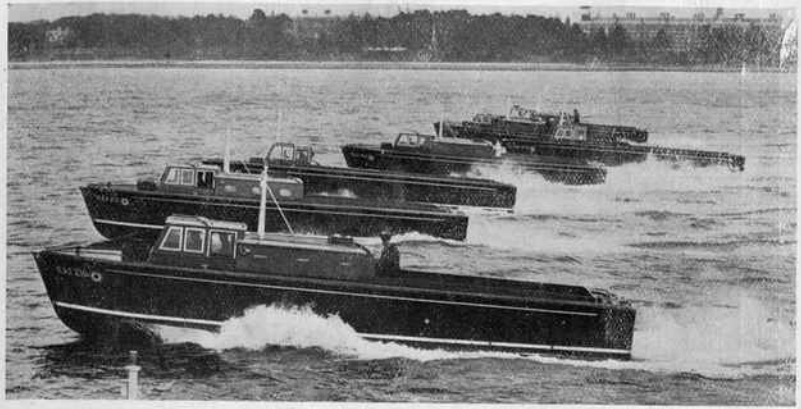

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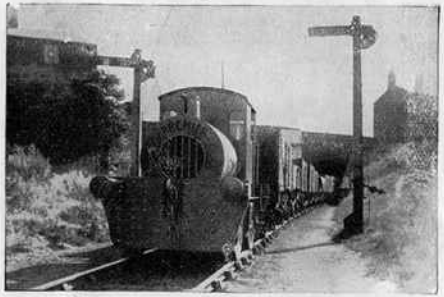

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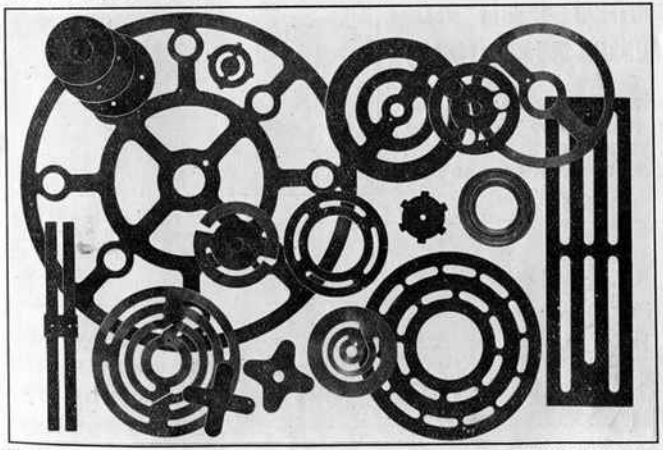

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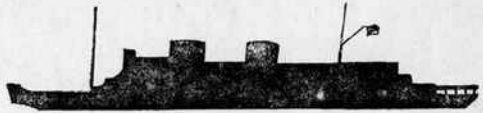

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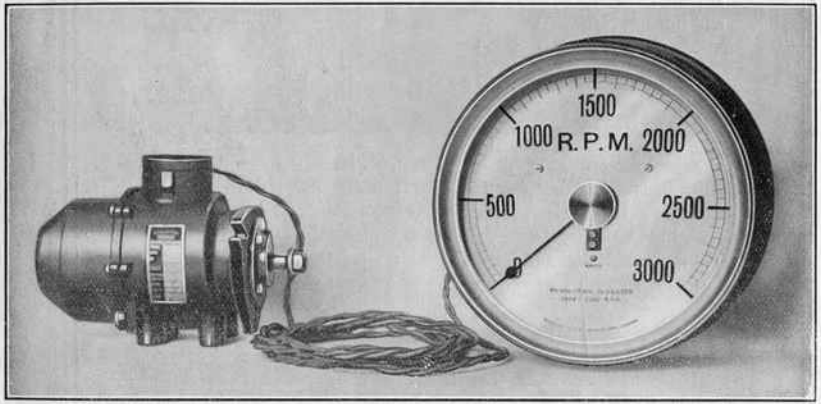

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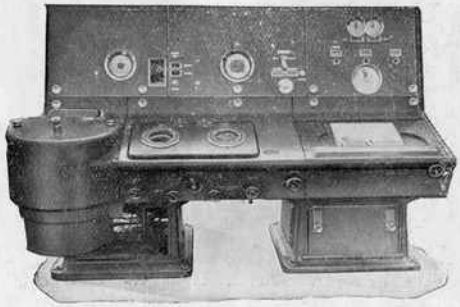

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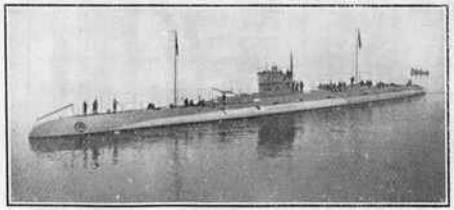

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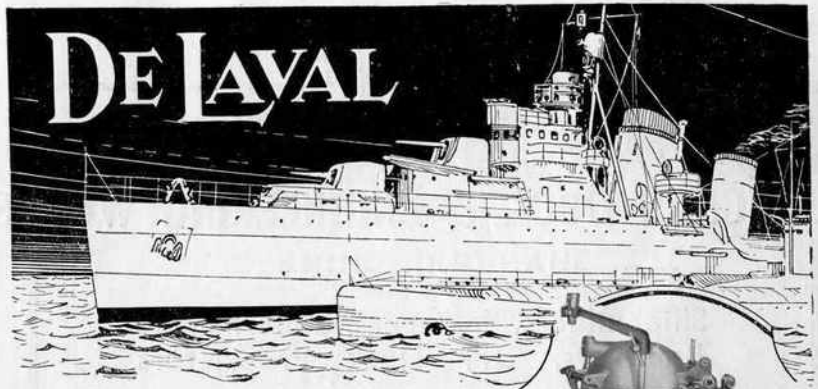

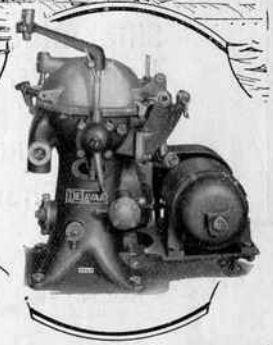

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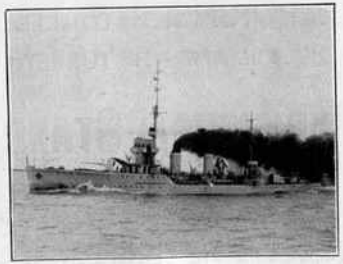

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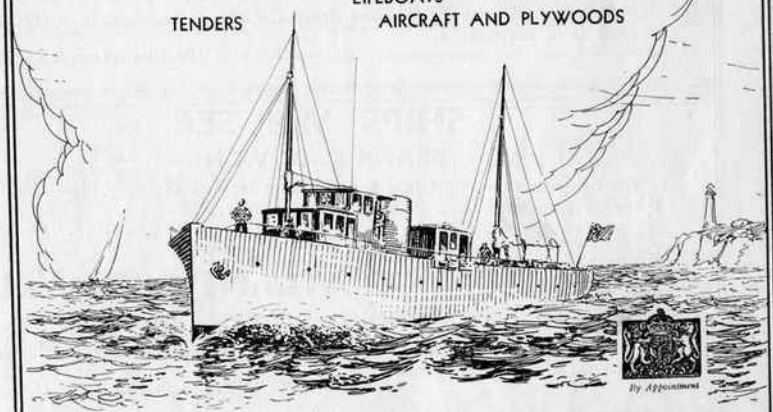

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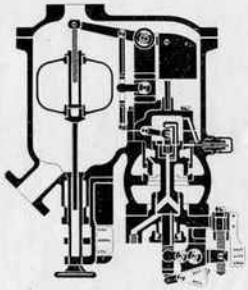

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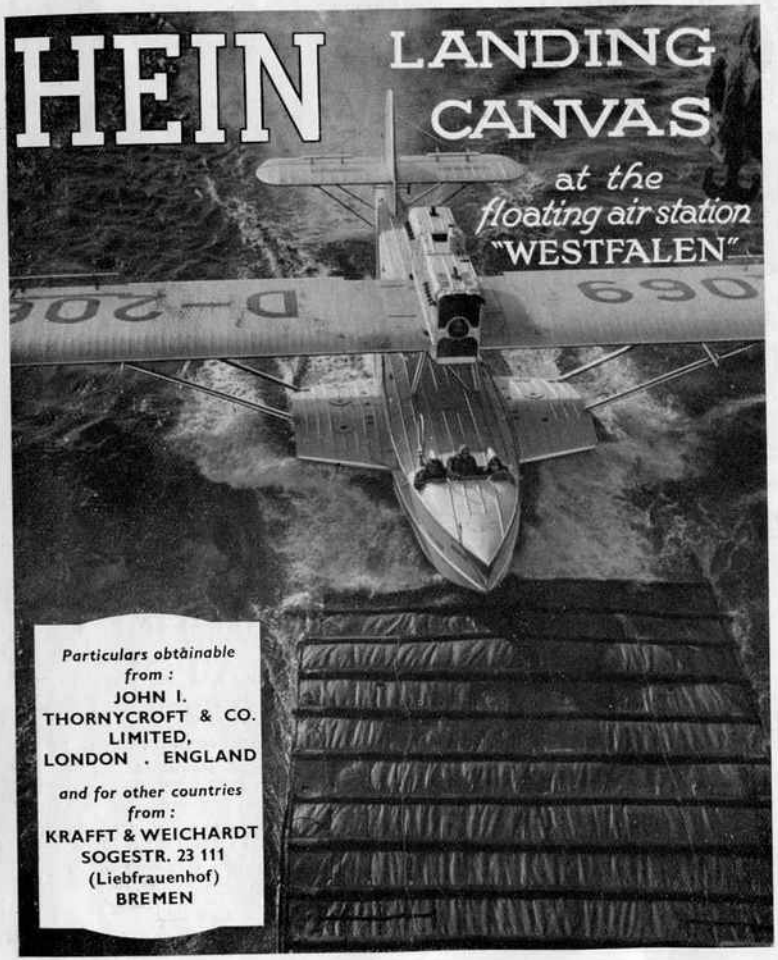

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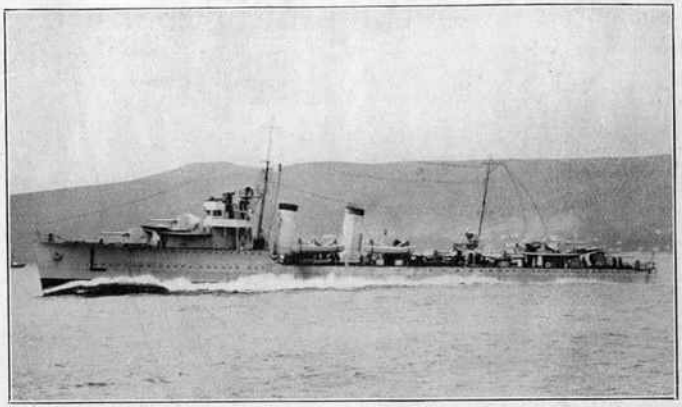

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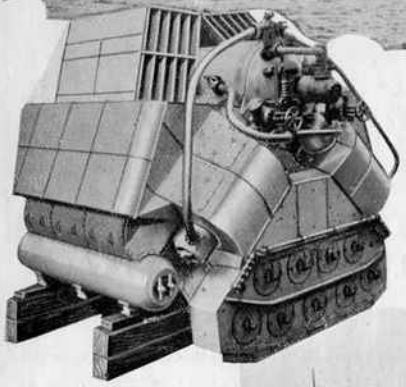

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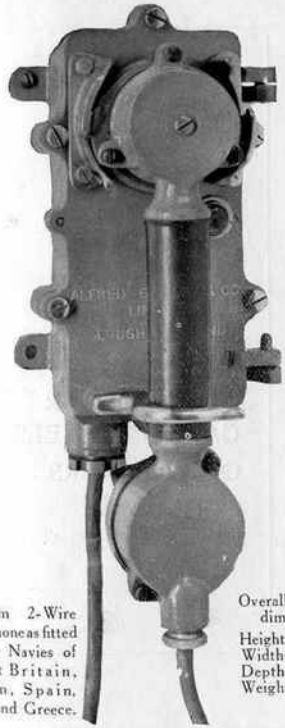

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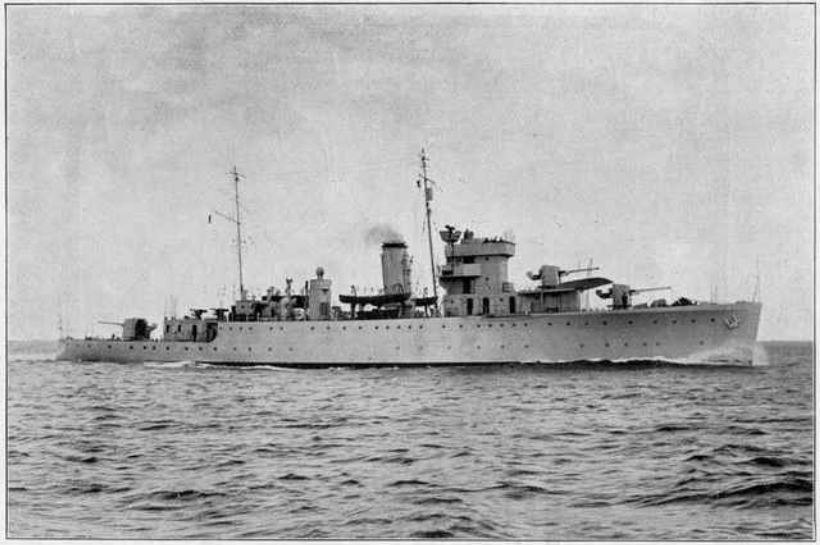

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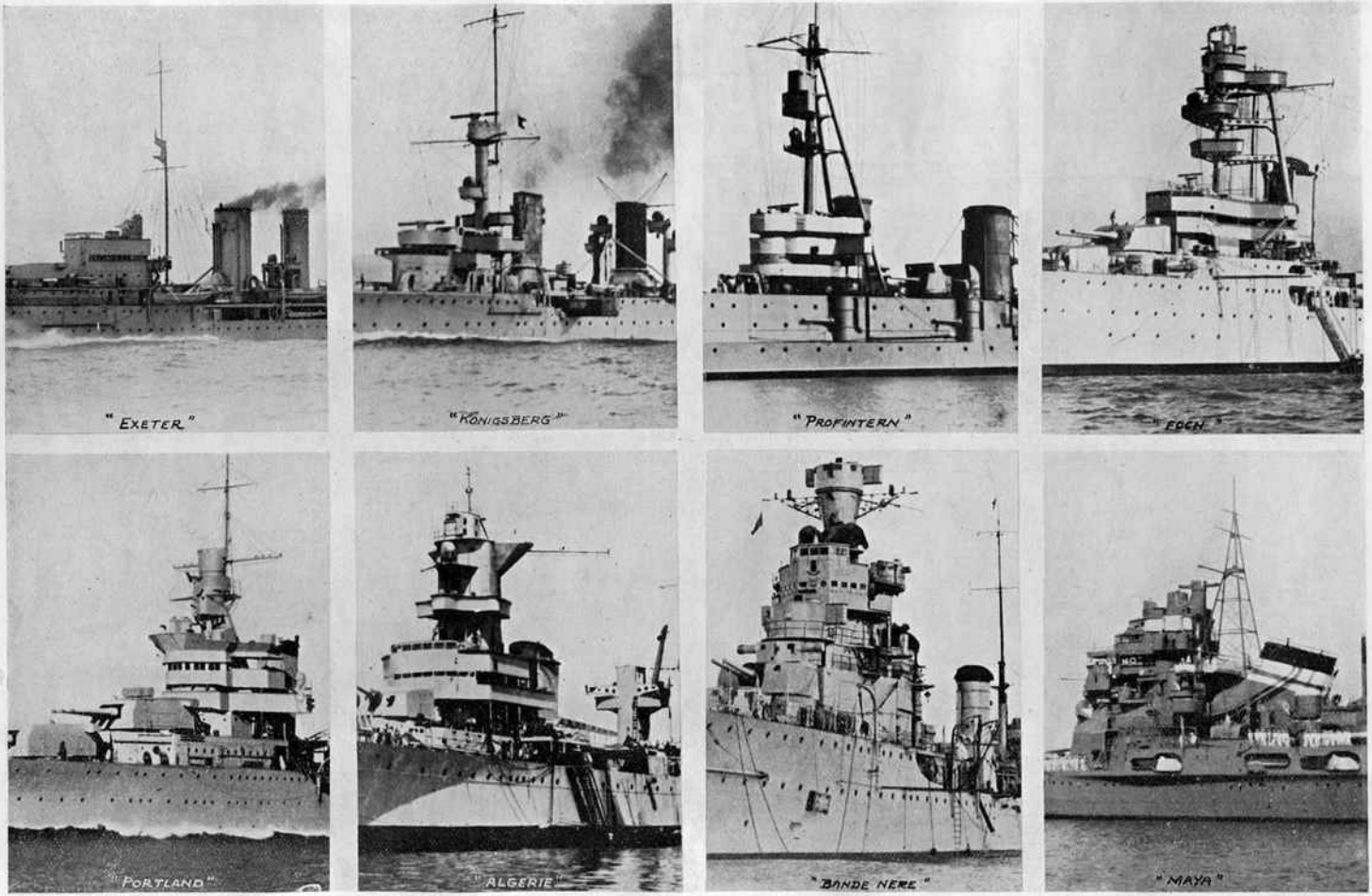

FROM POLE MAST TO PYLON. EXAMPLES OF RIG AND BRIDGEWORK IN RECENT CRUISERS.

[*Frontispiece*

FOREWORD

THE past year has been marked by a recrudescence of interest in naval affairs, due to the extensive programmes of replacement construction embarked upon in Japan and the U.S.A. As we write, last minute efforts are being made to save the Disarmament Conference from complete failure, but its energies must be concerned in the future status of Germany—a further whittling down of the British Navy can no longer be offered as a refresher for abortive efforts.

That we have allowed our naval strength to diminish to the danger point has been stressed by the First Lord. In point of fact the Navy could no longer guarantee the safety of our overseas supplies of food and oil in case of war, as the cruiser forces available are pitifully inadequate both in numbers and strength. That we should still retain ships like the early "C" class cruisers—which both by virtue of age and condition are due for the scrap heap—is striking testimony to the lengths we have been compelled to go in order that a numerical "sufficiency" should be shown on paper.

Our cruiser programmes for the past few years have been limited in numbers, size and armament by the one-sided concessions made by our representatives at the London Naval Conference, with the result that our constructors have been faced with the very disagreeable necessity of providing us with ships definitely inferior to their "opposite numbers" abroad. A hope that our example in reverting to small cruisers would lead other nations to do likewise has proved vain, and the announcement in the House that two 9,000 ton ships would replace the smaller type in the 1933 Programme is a welcome sign that this policy has now been abandoned—although under present limitations it again raises the question of size versus numbers.

In the U.S.A. a well-balanced naval programme has been put in hand—somewhat belatedly—to make good a deficiency in cruisers and replace worn-out destroyers, with the result that half a hundred different trades outside the shipbuilding yards are again busy. Last year we ventured to predict that something on the lines of another Naval Defence Act would become necessary to reduce the "risks of peace" and unemployment, and the passing of a year has only increased that necessity. The construction of ships for the safeguarding of food supplies is no aggressive preparation for war but the very reverse. An Empire unable to defend itself deserves the fate which has always overtaken it and always will, and the efforts of professional pacifists to achieve this end in the name of peace should no longer be tolerated.

The desire for Peace may be world-wide, but rapidly growing and virile Nations demand new markets and fresh territory for their surplus population. The League of Nations —in which neither the U.S.A., Japan or Germany have seats—has degenerated into a debating society, anxious and impotent. Peace in Europe may be achieved by Pacts and Treaties, but the preservation of peace in the Pacific will depend upon other factors. All the protestations of those who would have the League fight for Peace while they denounce War, cannot alter the march of events which is now in train.

Let us, then, look forward to the day when an unfettered Navy can assure us Peace, Prosperity and again a little of Dignity.

. . . . .

A fresh feature in this edition is the summary of naval forces inserted in many of the sections, and the fleet distribution of the British, U.S.A., and French Navies. Although the composition of the various squadrons is always being modified, it is hoped that by anticipating the entry of new ships into service the squadrons to be altered will be found correct for 1934. The summaries show ships building, under age, and over age according to the London Treaty dates, and will facilitate reference in assessing naval strength.

Over 450 new blocks have been added, and the text has been thoroughly revised and corrected to show the innumerable alterations

to tonnage, horse power, secondary armament and complement, uniforms and flags which possibly pass unnoticed although they entail almost as much labour as the collection of fresh material.

In the British section the most interesting photos will be found in the cruiser section where the new *Amphion*, modified *Arethusa* and *Leander* classes are freshly illustrated. Alterations to the *York* and *Exeter* are also shown, and as usual every class in which changes have been made has been re-illustrated. That curious ship, the *Guardian*, has merited three photos, and the new sloops of the *Hussar* and *Grimsby* types are shown by drawings. All the new types of submarines are shown, and in passing we could congratulate those responsible for the design and machinery of the *Thames*, both at Whitehall and Barrow, for having achieved the coveted 21 knots and over.

Although the *Deutschland* has been in service for a year very little fresh information is available concerning her protection and other details. The figures given are believed to be substantially correct and suggest that she is more or less a resuscitation of the old *Italia* idea on modern lines. The altered *Bremen* should be noted.

In the French section, plans and illustrations will be found of the much discussed *Dunkerque*, the new armoured cruisers of the *La Galissonnière* class, the *Emile Bertin*, new *Escorteurs* and submarine chasers, as well as photos of the curious looking *Algerie*.

Progress in the Italian Navy has been in the completion of ships rather than in new construction. Two of the second group of the speedy *Condottieri* light cruisers are now ready, and it must be admitted that they look singularly efficient ships. In *Pola* and *Bolzano* a novel way of obviating the suction effect of the big bridge on funnel smoke has been introduced, and with the entry of these ships into service the Italians certainly possess a fine squadron of Treaty cruisers capable of 36 knots or so.

Very few details about the new types incorporated in the Japanese Replenishment Programmes are as yet available. Although of a nominal 8,500 tons, it is now known that the *Mogami* class will carry fifteen 6.1″ guns—an armament which reduces our *Leanders* to impotence. Indeed, it is difficult to see how such a battery can be carried on a displacement 1,500 tons less than that required by the U.S.A. *Brooklyn* class. Although the first of the new destroyers is in service their armament is still unknown—a tribute to the secrecy which now enshrouds Japanese construction.

A clear flight deck has been a feature of Japanese carriers since the day when the *Hosho* lost her island superstructure and biped mast, and the *Ryujo* conforms to type. Her photo and plan merit careful study and a comparison of her dimensions with those of the *Hermes* will show how the low displacement has been achieved. It will be exceedingly interesting to see what the new 10,000 ton carriers will be like and what dimensions will be employed.

Year by year the Japanese battleships add to their malignant profiles until all semblance to their original appearance has vanished. All are to undergo complete reconstruction and this year the *Fuso* and *Yamashiro* present themselves in a new guise. The only photograph obtainable was taken at a great distance, and if the picture is blurred it must be excused on the grounds that in the print the ship was just half an inch long, necessitating careful copying and enlarging before a block could be made. An additional drawing furnishes details which otherwise would be missed. Fresh views of the *Atago* class will be found in the addenda, the close-ups of the extraordinary bridgework being well shown. The last four ships of the *Fubuki* class form a striking contrast to our own destroyers, the piled-up bridgework being especially noticeable. Several of the earlier vessels of this class now have screens over the torpedo tubes, and the extensions to the funnels are anti-flare caps which are now being fitted to all types of ships. Submarine I 5, which has been so long on hand, differs from her sisters in having two of her tubes external instead of submerged.

In the U.S.A. section will be found a plan of the *Ranger* and her launch photos. She was

designed to have ducts like the *Langley*, but for various reasons an island superstructure and funnel have been substituted. A number of fresh photos of all classes have been added, including the *Mississippi*—a strange addition to the tripod masted fleet. Next year it is hoped that details of the new programme ships will be available and the *Brooklyns* bid fair to be the most interesting cruisers yet built for the U.S.A.

Attention must be directed to the Portuguese section which has been entirely re-cast and freshly illustrated. With the arrival of the new sloops and destroyers a great impetus has been given to naval enthusiasm in Portugal, shown by the number of correspondents who have sent photographs and information. The contracts for building these ships came to this country at a critical time and from all accounts the Republic has no cause to regret that they were not built in Italy.

Throughout the book a large number of new photos will be found like the reconstructed *Sverige*, the Yugo-Slav monitors and the Mexican gunboats. In the silhouette indices a commencement has been made at reducing the size of the big ships to three and a half inches without loss of detail. The pages will be found to be more compact and recognition easier in consequence. In passing may we again mention that there can be no fixed scale for these little drawings the aim being to present each ship clearly and economically. Many official silhouette sheets which have adopted the stippled outline introduced by the Editor still cling to the scale system, with the result that well known big ships occupy unnecessary space and small ships are dwarfed to an unrecognisable size. Of the two we contend that the "F.S." system is the better, as ships do not present themselves for comparison but usually alone.

In conclusion, may we again extend our thanks to all who have helped to make the book this year. Both to the Naval Attachés and Home Authorities who had attended to the sectional revisions we are deeply grateful —especially in those instances when the original revision has been followed up with three or four lots of photos and addenda. Such friendly co-operation is of inestimable value and is appreciated to the fullest extent.

We are indebted to that skilled artist with pen and camera, Mr. R. Perkins, for the new plans and several photographs, and also for the most welcome assistance in many ways. For the use of photos and information we have to thank Capt. de Cor. M. Adam, Mons. M. le Masson and Commdt. P. Vincent-Brechignac. In the Italian section we gratefully acknowledge invaluable help from Ingegner Luigi Accorsi, Sig. Filippo Cianciofara and Capt. Ferretti, R.I.N., and to Eng. Lt. Aluine Martins da Silva and Senor Henrique Maufrey Seixas for the use of the many photos in the Portuguese section and a most careful revision of the text.

An old friend of *Fighting Ships*, Capt. Mateo Mille, has again placed his camera at our disposal, and we are indebted to Commdr. T. Hagman, R.S.N., for his photos in the Swedish section, and Mr. W. O. Waterman for the excellent selection of U.S. Navy photos he placed at our disposal.

To numerous friends and the Special Correspondents all over the world we send our greetings and best thanks. May we also record our special obligation to that correspondent whom the Editor wishes us to refer to as "Jimmie." Welcome assistance has also been given by Messrs. Vickers, Messrs. Yarrow, Messrs. Hawthorne Leslie, and Messrs. Thornycroft for which we are grateful.

To those Departments at the Admiralty which have furnished information we are, as always, deeply indebted and welcome this opportunity of acknowledging both assistance given and facilities extended.

During the year we have lost our oldest collaborateur Commdt. le Marquis de Balincourt, whose death will be a very real loss to a wide circle of friends. Founder of the naval annual *Les Flottes de Combat*, he was a true friend to England, and in every sense le Grand Seigneur.

THE PUBLISHERS.

GENERAL INDEX (Named Ships only.)

ABBREVIATIONS: (A) signifies Argentina, (Br) Brazilian, (Chil) Chilian, (C) Chinese, (Cu) Cuban, (Da) Danish, (F) French, (G) German, (Gr) Grecian, (I) Italian, (J) Japanese, (N) Netherlands, (Nor) Norwegian, (P) Peruvian, (Po) Polish, (Port) Portuguese, (Ro) Roumanian, (Rus) Russian, (Sp) Spanish, (Sw) Swedish, (T) Turkish, (U.S.) United States. No descriptive term implies British Empire.

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